

L 10895-67 EWT(1)/EWP(m)
ACC-NRT AR6033804 SOURCE CODE: UR/0124/66/000/007/B041/B041 23

AUTHOR: Usanov, V. V.

TITLE: Some problems of averaging gas flows

SOURCE: Ref. zh. Mekhanika, Abs. 7B317

REF SOURCE: Tr. Vses. n.-i. in-ta kriogen., kislородn. i kompressorn. mashinostr., vyp. 10, 1965, 96-104

TOPIC TAGS: gas flow, flow velocity, averaging

ABSTRACT: A theoretical study has been made of the problem of applying a one-dimensional model to various cases of gas flow. It is shown that any averaging of parameters inevitably leads to the loss of some of the properties of the gas flow. Therefore, it is necessary to make a thorough analysis of errors resulting from each specific method of averaging. It has been shown that at a great population of the velocity profile, the field coefficient exhibits a weak dependence on the law of averaging of velocities. The application of equations of a one-dimensional model, in this case, results in an insignificant error when determining the velocity. Bibliography of 4 titles. Yu. A. Lashkov. [Translation of abstract]

Card 1/1, 5pp

SUB CODE: 13/

GANDEL'SMAN, A.F., kund. tekhn. nauk; USANOV, V.V., inzh.; NAUPITS, L.N.,
inzh.

New data on heat exchange and hydrodynamic resistance in the
nearsonic region of a gas flow. Trudy VINKIMASH no.10:105-
114 '65. (MIRA 18:9)

L 1101-66 MT(P)/T/MP(t)/MTI JSP(c) JD

ACC NR: AP6021708

(N)

SOURCE CODE: UR/0148/66/000/003/0136/0139

AUTHOR: Usanov, V. V.; Postnikov, V. S.; Burmistrov, V. N.

ORG: Voronezh Polytechnic Institute (Voronezhskiy politekhnicheskiy institut)

48B

TITLE: Certain features of martensitic transformation in steels of the austenitic-martensitic class

SOURCE: IVUZ. Chernaya metallurgiya, no. 3, 1966, 136-139

TOPIC TAGS: martensitic transformation, austenite steel, martensite steel, torsional vibration, internal friction, metal grain structure

ABSTRACT: This is a continuation of previous investigations (V. S. Postnikov et al. Izv. VUZ, Chernaya metallurgiya, 1964, no. 11; V. S. Postnikov et al. Sb. Instituta metallurgii im. Baykova, "Issledovaniye staley i splavov," Izd-vo "Nauka," 1964, 367), with the difference that it deals with certain features of the course of $\gamma \rightarrow M$ transformation in austenitic steels of the transition class, as determined by tests of internal friction, resistivity, and magnetometry and dilatometry in the process of cooling. These steels, conditionally denoted 1 and 2, contain 0.07 and 0.08% C, 16.8 and 15.98% Cr, 5.35 and 5.35% Ni, and 1.85 and 3.08% Mo, respectively. In all tests the specimens were heated to temperatures T_{on} of the onset of martensitic

Cgrd 1/4

UDC: 669.26'24'28:669.011.7

L-1014-66
ACC NR:

AP6021708

transformation (750-1000°C) for 20 min, after which the corresponding curves of cooling were plotted at ~6 deg/min. Findings: the peak of internal friction, as determined with the aid of a torsional pendulum, consists of a principal peak A and a secondary peak B, the latter detectable during careful measurements of internal friction in the process of cooling below the temperature of the principal peak (Fig. 1). Curve 3 (Fig. 1) shows a change in the height of peak A* on increase in frequency from 0.4 to 16 cps: the increase in frequency from 0.4 to 1 cps increases the height of the peaks but any further increase in frequency (to 16 cps) reduces this height sharply. With increase in oscillation amplitude the peaks A and B get displaced into the region of higher temperatures; then the height of the peaks (and particularly of A) sharply increases (Fig. 2). The sharp increase in the internal friction of austenitic steels in the temperature range of 120-160°C (Fig. 3) during their cooling from normalizing temperatures is due to $\gamma \rightarrow M$ transformation. Thus, the highly sensitive internal-friction tests reveal the existence of a double $\gamma \rightarrow M$ transformation due to the inhomogeneity of the grain composition of cold austenite; this could not be detected with the aid of the other physical tests used in this investigation. The nature of the peak B and the mechanism of $\gamma \rightarrow M$ transformation are as yet unclear.

Card 2/4

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AP6021708

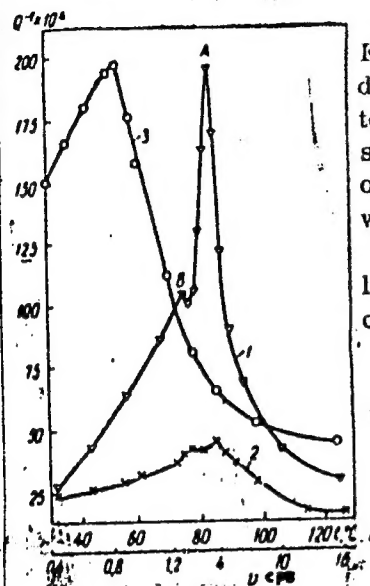


Fig. 1. Frequency dependence of the height of internal-friction peak for steel 2 (3) and its position on the temperature scale when:

1 - $v_1 = 1$ cps; 2 - $v_2 = 16$ cps; $T_{on} = 850^\circ\text{C}$

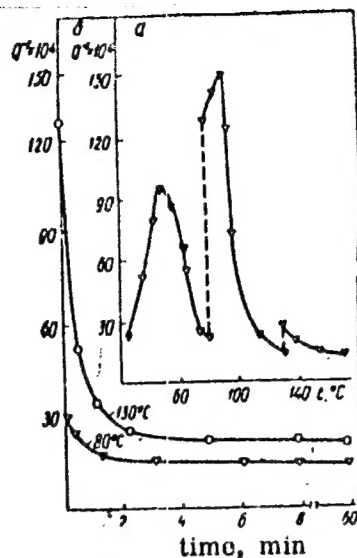


Fig. 2. Variation in the curve of internal-friction peak for steel 2 when $T_{on} = 850^\circ\text{C}$ and $v = 1$ cps, as a function of:

a - isothermal exposure; b - isothermal variation in internal friction

Card 3/4

L 41014-66

ACC NR: AP6021708

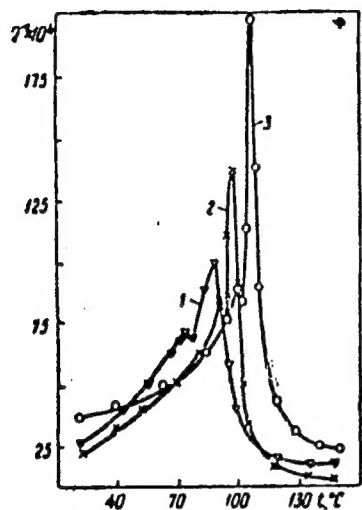


Fig. 3. Amplitude dependence of internal-friction peaks A and B for steel 1 when $T_{on} = 850^{\circ}\text{C}$ and $\nu = 1.2 \text{ cps}$:

1 - $\tau_1 = 0.3 \text{ kg/mm}^2$; 2 - $\tau_2 = 2.5 \text{ kg/mm}^2$; 3 - $\tau_3 = 3.3 \text{ kg/mm}^2$

Orig. art. has: 4 figures.

SUB CODE: 11, 20, 13/ SUBM DATE: 18Jan65/ ORIG REF: 005/ OTH REF: 002

Card 4/4 hs

1. 10927-66 ENT(m)/T/AMM(t)/M1 IIP(c) JD

ACC NR: AP6030180

SOURCE CODE: UR/0148/66/000/005/0144/0146

AUTHOR: Postnikov, V. S.; Sharshakov, I. M.; Usanov, V. V.

ORG: Voronezh Polytechnical Institute (Voronezhskiy politekhnicheskiy institut)

TITLE: Amplitude frequency dependence of the internal friction of certain steels

SOURCE: IVUZ. Chernaya metallurgiya, no. 5, 1966, 144-146

TOPIC TAGS: internal friction, austenite transformation, plastic deformation, carbon steel, chromium steel, nickel steel, torsional vibration/50 carbon steel, Kh17N5M3 chromium steel, Kh16N6 chromium steel, Kh16N11 chromium steel

ABSTRACT: Any measure of internal friction is understandably divided into two components: amplitude-independent and amplitude-dependent. This division is arbitrary since these forms of internal friction usually overlap one another and likewise can be interrelated.

In connection with contradictory experimental data relative to the frequency relationship of the contributions of both types of internal friction and the almost complete lack of these data for low-frequency torsion vibrations, the present research was undertaken. Carbon steel 50 and chromium-nickel steels Kh17N5M3, Kh16N6, and Kh16N11 were used.

The internal friction was measured on a torsion pendulum on specimens 1 mm in diameter and 100 mm long. The shear strain amplitude was measured between $3 \cdot 10^{-5}$ to $8 \cdot 10^{-4}$ and frequency from 0.4 to 18 cps. Recording of data at low frequencies was done visually but at the high frequencies with an N700 vibration oscilloscope.

Card 1/2

UDC: 669.15:539.67

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L 40927-66

ACC NR: AP6030180

Before measurement of internal friction all specimens were annealed in a closed quartz tube at 1050°C for 4 hours. The Cr-Ni-steel specimens were later subjected to normalization at 800-1100°C and the steel 50 specimens were quenched in water from 740°C.

Resulting data were in agreement with results obtained by others. The increase in shear strain amplitude to $1-2 \cdot 10^{-4}$ does not change the value of internal friction. Further increase in the shear strain amplitude leads to an increase in internal friction.

The increase in internal friction level with the normalizing temperature decrease is associated with the transformation of austenite into martensite and their different inclination to plastic microdeformation.

The increase in vibration frequency of the specimen from 0.4 to 2.5 cps for steel Kh17N5M3 (and Kh16N11) and to 4 cps for steel 50 does not have any noticeable effect on the internal friction components. Further increase in vibration frequency of the specimen increases the internal friction whereupon the greater the shear strain amplitude the sharper the increase in internal friction. Orig. art. has: 4 figures. [JPRS: 36,774]

SUB CODE: 11, 20 / SUBM DATE: 17Dec64 / ORIG REF: 006 / OTH REF: 006

Card 2/2

AZAROV, A.S., kand. tekhn.nauk, dots.; USANOV, Ye.A., inzh.,
retsenzent; KUREPINA, G.N., red.izd-va; DENINA, I.A.,
red.izd-va; LEYKINA, T.L., red.izd-va; SPERANSKAYA, OV.,
tekhn. red.

[Mechanization and automation of technological processes
in the machinery industry] Mekhanizatsiia i avtomatiza-
tsiia tekhnologicheskikh protsessov v mashinostroenii. Mo-
skva, Mashgiz, 1963. 414 p. (MIRA 17:2)

SIMONOVA, N.I.; USANOV, Yu.Ye.

Synthesis of 4-methyl-1-phenyl-3-pyrazolidinone (phenidone "B").
Zhur.VKHO 7 no.2:239 '62. (MIRA 15:4)

1. Leningradskiy institut kinoinzhenerov.
(Pyrazolidinone)

BLYUMBERG, I.B.; DIMITROV, R.V.; USANOV, Yu.Ye.

Kinetics of the processes of high-speed developing of cinematographic materials. Zhur. nauch. i prikl. fot. i kin. 9 no.5: 336-341 S-O '64. (MIRA 17:10)

1. Leningradskiy institut kinoinzhenerov (LIKI).

BLYUMBERG, I.B.; DIMITROV, R.V.; USANOV, Yu.Ye.

Investigating the temperature dependences in high-speed developing.
Zhur.nauch. i prikl.fot. i kin. 9 no.6:405-410 N-D '64. (MIRA 18:1)

1. Leningradskiy institut kinoinzhenerov.

POSPELOVA, G.L., nauchn. red.; USANOVA, A., nauchn. red.

[New finishing materials and the mechanization of the processes of furniture finishing; materials] Novye otdelochnye materialy i mekhanizatsiia protsessov otdelki mebeli; materialy. Moskva, TSentr. in-t tekhn. informatsii i ekon. issl. po lesnoi, bumazhnoi i derevoobrabatyvaiushchei promyshl., 1963. 43 p. (MIRA 17:7)

1. Soveshchaniye rabotnikov mebel'noy promyshlennosti na temu "Novyye otdelochnye materialy i mekhanizatsiya protsessov otdelki mebeli." Moscow, 1962.

KORSHUN, L.L.; NOTKIN, M.M.; STRADA, V.Yu.; TSVETKOVA, L.F.;
KIMRYAKOV, N.A.; USANOVA A.P., red.

[The "NK" nitrourea coating Nitrokarbanidnaya gruntovka
"NK" Moskva. TSentr. nauchno-issl. in-t informatsii i tekhniko-
ekon. issledovaniy po lesnoi, tselliulozno-bumazhnoi, derevo-
obrabatyvaiushchei promyshl. i lesnomu khoz., 1964. 15 p.

(MIRA 17:12)

1. Vsesoyuznyy proyektno-konstruktorskiy i tekhnologicheskii
institut mebeli (for Korshun, Notkin, Strada, TSvetkova).
1. Mebel'naya fabrika No.7 Soveta narodnogo khozyaystva Mo-
skovskogo gorodskogo ekonomicheskogo rayona (for Kimryakov).

BALASHOV, V.I., podpolkovnik meditsinskoy sluzhby; USANOVA, A.V.

Influenzalike form of food toxinfection. Voen.-med. zhurn. No. 4:86
Ap '60. (MIRA 1r:1)

(FOOD POISONING)

BALASHOV, V.I.; ARGUNOV, R.S.; SOKOLOV, I.A.; ROGOZHIN, V.A.; USANOVA, A.V.

Outbreak of food toxicoinfection caused by two types of Salmonella.
Zhur.mikrobiol., epid.i immun. 32 no.12:114 D '61.

(MIRA 15:11)

(FOOD POISONING)

(SALMONELLA)

PA 50110

USSR/Electricity - Conservation
Fuel - Conservation Dec 1947

"Rationalizing the Consumption of Fuel and Electrical Power," V. G. Usanova, GlavVostochnoEnergo Bet, 47 pp

"Energeticheskij Byull" No 12

Rational use of fuel and electrical power most important for the national economy. Most interesting one-page table gives relative consumption and norms set for various enterprises. Table takes in fuel and electric power. Also gives table showing average expenditure of electric power during drilling operations. Author states that for most advanced

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USSR/Electricity - Conservation (Contd) Dec 1947

teagueous use of electric power, equipment must perform at optimum, and new more efficient methods should be adopted as soon as possible. Figures in tables for 1945 through 1947.

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USANOVA, G.V.

BOLEVA, H. T.

"Surgical Treatment of Fibromyomas." Thesis for
Degree of Cand. Medical Sci. Sub 21 Feb 50,
Central Inst for the Advanced Training of
Physicians

Summary 71, 4 Sep 52. Dissertations

Presented for Degrees in Science and
Engineering in Moscow in 1950. From
Vechernyaya Moskva, Jan-Dec 1950

USSR/Medicine/Biochemistry - radiology

USANOVA, M. I.

FD-2947

Card 1/1 Pub. 17-11/23

Author : Usanova, M. I. and Shnol', S. E.

Title : ~~Distribution of tagged caffeine~~ Distribution of tagged caffeine in the animal organism and its transfer from mother to embryo

Periodical : Byul. eksp. biol. i med. 7, 41-44, July 1955

Abstract : Author investigated the progress of tagged caffeine in the animal organism, dynamics of its transmission from mother to embryo, and methods of its administration by experiments on rats. The rats were given 1 ml of an aqueous solution of caffeine with radioactive carbon C^{14} by subcutaneous injection. The caffeine was found in all organs and in the cerebrum - in pregnant rats also in the placenta and the tissues and organs of the embryo. One hour and 40 minutes after administration radioactivity can be observed simultaneously in all organs in the following order: kidneys, liver, lungs, cerebral hemispheres. (Distribution in the central nervous system will be taken up later in more detail.) 4 references, 2 USSR, 4 since 1940, graphs

Institution : Chair of Obstetrics and Gynecology (Head: Prof. F. A. Syrovatko)
and Chair of Medical Radiology (Head: Prof. V. K. Modestov)
Central Institute for the Advanced Training of Physicians, Moscow

Submitted : 24 May 1954

L 4482-66

ACC NR: AP5024651

muons and 10^{-15} muons/cm² sec sterad BeV for 10 BeV muons. Orig. art. has: 2 figures.

SUB CODE: NP/ SUBM DATE: 00/-

ORIG REF: 001/ OTM REF: 000

SC

Card 2/2

CHERNOBEREZHSKIY, Yu.M.; ZUBKOVA, S.N.; USANOVA, S.D.; AFANAS'YEVA, L.V.

Study of the suspension effect. Koll. zhur. 27 no.5:780-783 S-0 '65.
(MIRA 18:10)

1. Leningradskiy universitet imeni Zhdanova.

KALYAYEV, A.; USANOVA, Ye.

"Laboratory Methods in Soviet Sanitation Practices," Meditsinskiy Rabotnik, Vol 17, No 96, 30 Nov 1954 p 2.

Physician at the laboratory of a hospital in Yeniseysk.

Translation W-31326, 28 June 54

1134 M

CULTIVATED PLANTS. Potatoes. Vegetables.
 AGG. SOUR. - Cucurbits
 BIOLOGIYA, NO. 4, 1959, No. 15660

AUTHOR Usanova, Z.; Belyakova, G.
 INST. Moscow Agric. Acad.
 TITLE .Certain Characteristics of the Growth and
 Development of American artichoke in the
 Moscow Oblast.

ORIG. PUB. : Sb. stud. nauchno-issled. rabot. Mosk. s.-kh.
 akad. im. K.A. Timiryazeva, 1958, vyp. 8, 89-95

ABSTRACT :The authors think it is inaccurate to divide
 the American artichoke sorts into the red-tuber
 and white-tuber varieties. According
 to bush type all sorts can be divided into:
 (1) low-growth, drooping, intensely branching
 (Kievskaya krasnaya, Belaya uro-
 zhaynaya, Vadim) does not flower near
 Moscow; (2) high-growth, with straight-stand-
 ing stalk, few branches (Tambovskaya
 :Krasnaya, Saratovskaya, Hybrids 15, 120, 177-31

CARD: 1/2

USANOVICH, M. I.

9124 AERE-Lib/Trans-611

THE ELECTRICAL CONDUCTIVITY OF THE SYSTEM:

ARSENIC TRIBROMIDE-ETHYL ETHER. M. Usanovich. Translated by R. J. Richardson from *Z. physik.*

Chem. 171, 427-36 (1970). 8p.

The specific conductivity of the $\text{AsBr}_3\text{-Et}_2\text{O}$ system was measured for the entire range of AsBr_3 concentrations.

The conductivity rises to a maximum value of $k = 4 \times 10^{-4}$ at a concentration ≈ 95 wt.% AsBr_3 and then falls quickly to the true conductivity of pure AsBr_3 ($k = 1.5 \times 10^{-4}$). (auth)

USANOVICH, M.I.

3000

✓ 6538 AENE-Lib/Trans-640
ELECTROCHEMICAL INVESTIGATIONS ON ETHEREAL
SOLUTIONS. II. THE SYSTEM: ARSENIC TRICHLORIDE-
DIETHYL ETHER. M. Usanowitsch. Translated by F.
Hudswell from Z. physik. Chem. 140A, 429-34(1929). 7p.
The molecular conductivity and decomposition potential
have been determined for solutions of $AsCl_3$ in Et_2O . (auth)

Chem

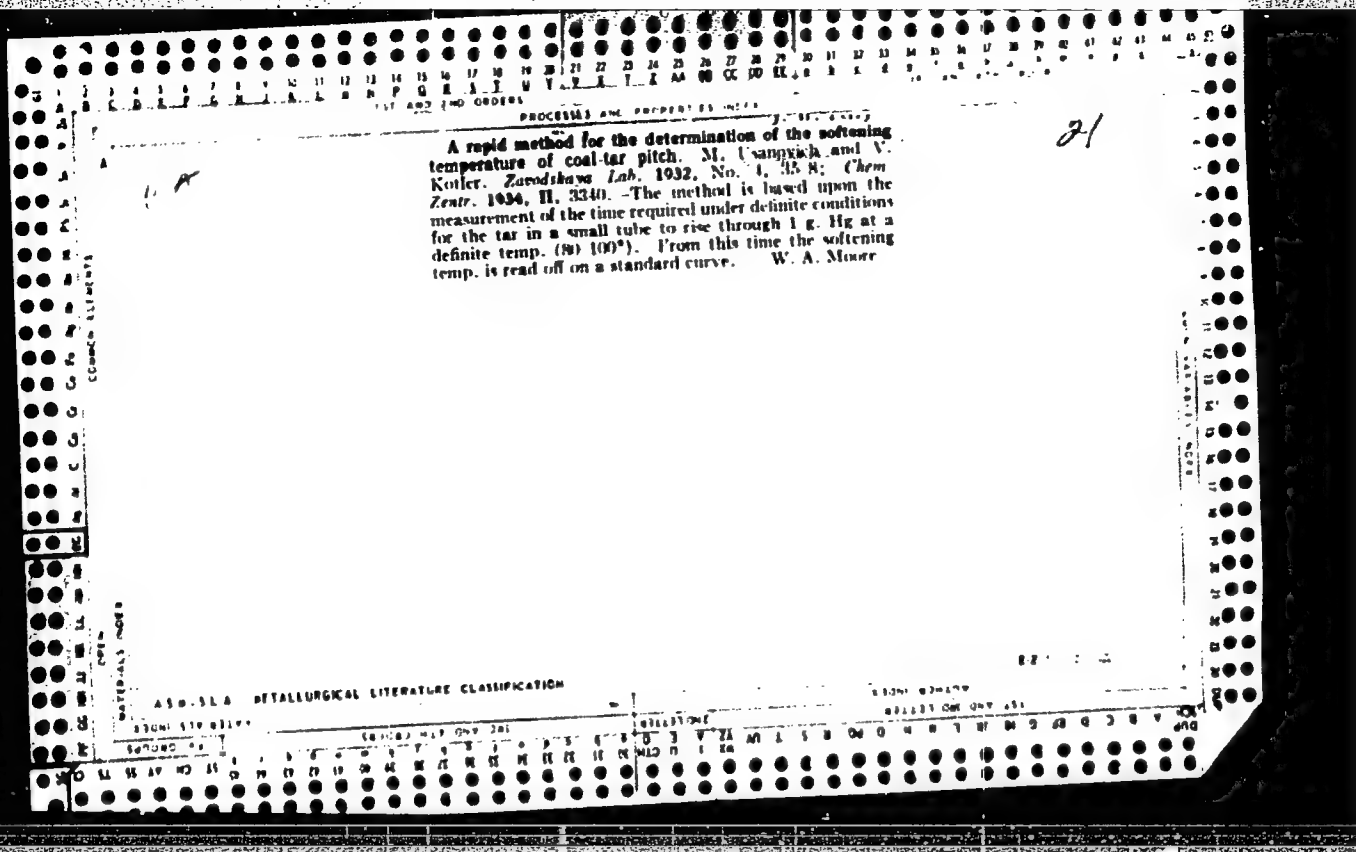
mm

System: potassium carbonate-calcium hydroxide potassium hydroxide calcium carbonate. At I. URAMOVICH AND S. A. ROMOVICH. *Izvestiya Khim. Zhur.* 6, No. 14, 470 (1920).—The yield of KOH obtained by the reaction between Ca(OH)_2 and K_2CO_3 declines from 90% when 0.92 M K_2CO_3 is used to 45% when 0.45 M soln. are used. The conditions of formation of the double compd. $\text{K}_2\text{CO}_3 \cdot \text{CaCO}_3$ were studied and it is shown that the reaction, $\text{K}_2\text{CO}_3 + \text{CaCO}_3 \rightleftharpoons \text{K}_2\text{CO}_3 \cdot \text{CaCO}_3$, is of the autocatalytic type, as the addn. of the double compd. to its components greatly increases the velocity of its further production. The velocity of the above reaction in the presence of a no. of inact. catalysts is in the order $\text{K}_2\text{Mg}(\text{CO}_3)_2 > \text{MnO}_2 > \text{HgO} > \text{Fe} > \text{CaO} > \text{CuO} > \text{NiO} > \text{Nb}_2\text{O}_5 > \text{Cu}_2\text{O} > \text{Hg} > \text{SiO}_2 > \text{PbO} > \text{PbO}_2 > \text{Co}$. The action of the first of these catalysts is similar to that of $\text{K}_2\text{CO}_3 \cdot \text{CaCO}_3$; the remaining substances up to and including Hg do not affect the order of the reaction, but affect only its velocity. Silver has no catalytic effect, and the remaining substances exert an increasingly inhibitive action. The reaction takes place exclusively in soln., its velocity agreeing with the Ostwald formula for autocatalyzed reactions, when the active mass of K_2CO_3 is taken to be that part of it which is present in excess of that required for equil. (37.31%). B. C. A.

Electrochemistry of other solutions. V. Electric conductivity of other solutions in relation to complex formation. M. UANOVICH, *J. Gen. Chem. (U. S. S. R.)* 2, 443 (1952); cf. C. A. 23, 3302. The Nernst-Thomson rule for cond. of electrolytes in soln. does not hold in a no. of cases, particularly where the solute and the solvent form complexes. In continuation of the previous work on cond. of solns. of halogen salts in Et_2O , and Et_2O , tests were made on cond. of AsBr_3 , SbCl_3 and SbBr_3 in anisole. The solns. were non-conducting, which is contrary to expectation, since SbCl_3 and SbBr_3 are known to form complexes with anisole. This is explained on the ground that in this case the presence of an aromatic radical, such as phenyl, prevents the formation of an oxonium salt, as in the case with aliphatic ether-halogen salt complexes. VI. System: Antimony trichloride ether. M. UANOVICH AND P. TAPROGOV, *Ibid.* 447-54. The sp. elec. cond. of the system $\text{SbCl}_3\text{-Et}_2\text{O}$ in various concns. up to 100% SbCl_3 , was measured at 18°. A max. cond. 2.6×10^{-8} is obtained at a salt concn. of 95%. The cond. at various concns. changes considerably with temp. in the interval -20° to 70°. The decomposition voltage of the salt was found to be 0.07 v. It is assumed that the electrolyte in this case is an oxonium salt, $\text{Et}_2\text{O}^+\text{SbCl}_3^-$. S. L. MATHOMBY

Electrochemistry of other solutions. VII. Electric conductivity of the system: $\text{AsBr}_3\text{--CH}_3\text{OC}_2\text{H}_5$. M. LAGANOVICH AND R. G. ROZENTHALL. *J. Gen. Chem. (U. S. S. R.)* 2, 864-7 (1932); *cf. C. A. 77*, 1280. Sp. cond. of AsBr_3 in $\text{CH}_3\text{OC}_2\text{H}_5$ was detd. through the range of 22-92% concn. by wt. of AsBr_3 at 18° and 30°. The curves for both temps. pass through a max. at about 40% AsBr_3 . There is indication of a compl. $\text{AsBr}_3\text{--CH}_3\text{OC}_2\text{H}_5$. VIII. Electric conductivity and viscosity of the system $\text{AsCl}_3\text{--(C}_2\text{H}_5)_2\text{O}$. P. I. TAPRODOV. *Ibid.* 1936-74. Viscosity, η , was measured through the whole range of concn. of AsCl_3 in $(\text{C}_2\text{H}_5)_2\text{O}$ at 0°, 10°, 18°, 30°, 40° and 50°. The relation between η and abs. temp. T is expressed by the formula $\eta = Ae^{B/T}$, where A and B are const. The diagram of viscosities shows that this system belongs to the "irregular" type. Elec. cond. of this system was studied through the concn. interval 20.17-100% by wt. of AsCl_3 at the same temps. as η . The existence of $\text{AlCl}_3\text{--(C}_2\text{H}_5)_2\text{O}$ as an electrolyte was established. IX. Electric conductivity and viscosity of the system $\text{AsOH--(C}_2\text{H}_5)_2\text{O}$. A. G. PIRANOV. *Ibid.* 1975-7. This system is nonconducting. Viscosity was measured through the whole range of concn. at 0°, 10°, 18°, 30°, 40° and 50°. The system belongs to the "ideal" type, showing no chem. reaction between the 2 components. X. Viscosity of the system $\text{PbCl}_2\text{--(C}_2\text{H}_5)_2\text{O}$. K. G. ROZENTHALL. *Ibid.* 1978-9. This system is nonconducting. Viscosity was measured through the whole range of concn. at 0°, 10° and 18°. The system belongs to the "ideal" type. S. I. MAIDANOV

ASB.SLA METALLURGICAL LITERATURE CLASSIFICATION



Potentiometric determination of free caustic in phenates. V. A. KARGIN AND
M. I. UMANOVICH, *J. Applied Chem. (U.S.S.R.)* 5, 458 (2-1962). Potentiometric
titration of free caustic in phenates is possible by using smooth Pt electrodes.
V. KATCHEVSKY

ASD 510 OPTICAL TRANSMITTANCE CLASSIFICATION

2

Electrical conductivities of binary systems with sulfuric acid as a component.
J. M. Uppeyrich. *Physik Z. Supplement* 4, 134-5(1933).— H_2O , PhO , PhNC ,
 AcOH and HN form compds. with H_2SO_4 . These compds. act as buffers in the sense
of the Brönsted theory. S. Bradford Stone

ASAC-51A METALLURGICAL LITERATURE CLASSIFICATION

Electrochemistry of other solutions.

of the system sulfuric acid ethyl ether. *J. Gen. Chem.* (U. S. S. R.) 4, 218 (1934). --Ither. cond. of the system concn. of 27.44-100% of H_2SO_4 was measured at 0° and 25°. The two isotherms for sp. and 25°. Here, as in other points of electrolytes, the cond. of the system is due to the presence of H_2SO_4 and $H_2SO_4 \cdot Et_2O$.
 XIII. Viscosity of the system arsenic acid. *M. P. Shulgina. Ibid.* 221-4. --Viscosity of the system $AsCl_3 \cdot C_2H_5OC_2H_5$ in all concns. was measured at 0°, 20°, 40°, 60° and 80°. Maxima appearing in all the isotherms at concn. of 10 mola. % indicate the complex $AsCl_3 \cdot C_2H_5OC_2H_5$. The system is nonconducting. XIV. Viscosity of the system $AsCl_3 \cdot H_2SO_4$. *P. A. Zavarikhina. Ibid.* 227-8. --Viscosity of the system $AsCl_3 \cdot H_2SO_4$ in all concns. was measured at 20°, 30°, 40°, 50° and 60°. The isotherms pass through a sharp max. at about 17 mola. % H_2SO_4 , indicating the complex compound $AsCl_3 \cdot 2H_2SO_4$. XV. System antimony trichloride ethyl ether. *M. Usanovich and V. Serlsennikov. Ibid.* 229-34. --Elec. cond. of the system $SbCl_3 \cdot Et_2O$ in concns. of 2.97-100 mola. % of $SbCl_3$ was measured at 20°; also, of mixts. contg. 14.13, 20.90, 23.31, 38.25, 47.41, 67.18, 71.15, 82.36 and 90.41 mola. % $SbCl_3$ in Et_2O measured in each case at 20°, 30° and 40°. The 20° isotherm rises sharply at 67.15 and at 82.3 mola. % $SbCl_3$. The compd. $Et_2O \cdot 2SbCl_3$ was established. This compd. is held responsible for the elec. cond. of the system. XVI. Electrical conductivity and viscosity of the system chloromethyl ether arsenic trichloride. *P. I. Terpigunov. Ibid.* 235-9. Viscosity of the system $CH_3ClOC_2H_5 \cdot AsCl_3$ in all concns. was measured at 0°, 10°, 20°, 30°, 40° and 50°. Isotherms indicate the compd. $CH_3ClOC_2H_5 \cdot AsCl_3$. Elec. cond. isotherms for the same system were detd. at 0°, 10°, 20°, 30° and 40°. Cond. curves confirm the above conclusion. Introduction of Cl into the ether mol. decreases the tendency for complex formation with chlorides of the elements of the 5th group of the periodic system. *S. L. M.*

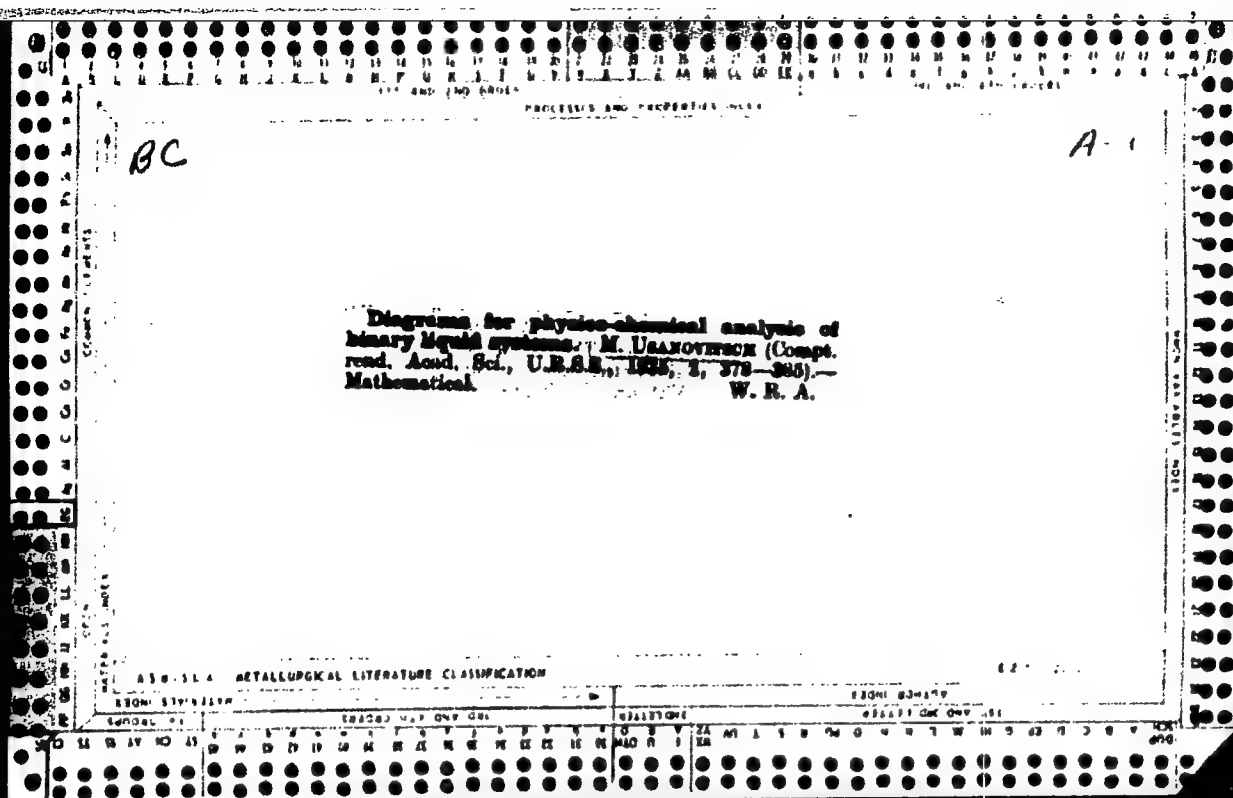
II. Conductivity

M. Usanovich. Ibid. 1034; cf. C. A. 1934, 1034. --Ither. cond. of the system $H_2SO_4 \cdot Et_2O$ in concns. of 27.44-100% of H_2SO_4 was measured at 0° and 25°. The two isotherms for sp. and 25°. Here, as in other points of electrolytes, the cond. of the system is due to the presence of H_2SO_4 and $H_2SO_4 \cdot Et_2O$.

III. Viscosity of the system

M. P. Shulgina. Ibid. 221-4. --Viscosity of the system $AsCl_3 \cdot C_2H_5OC_2H_5$ in all concns. was measured at 0°, 20°, 40°, 60° and 80°. Maxima appearing in all the isotherms at concn. of 10 mola. % indicate the complex $AsCl_3 \cdot C_2H_5OC_2H_5$. The system is nonconducting. XIV. Viscosity of the system $AsCl_3 \cdot H_2SO_4$. *P. A. Zavarikhina. Ibid.* 227-8. --Viscosity of the system $AsCl_3 \cdot H_2SO_4$ in all concns. was measured at 20°, 30°, 40°, 50° and 60°. The isotherms pass through a sharp max. at about 17 mola. % H_2SO_4 , indicating the complex compound $AsCl_3 \cdot 2H_2SO_4$. XV. System antimony trichloride ethyl ether. *M. Usanovich and V. Serlsennikov. Ibid.* 229-34. --Elec. cond. of the system $SbCl_3 \cdot Et_2O$ in concns. of 2.97-100 mola. % of $SbCl_3$ was measured at 20°; also, of mixts. contg. 14.13, 20.90, 23.31, 38.25, 47.41, 67.18, 71.15, 82.36 and 90.41 mola. % $SbCl_3$ in Et_2O measured in each case at 20°, 30° and 40°. The 20° isotherm rises sharply at 67.15 and at 82.3 mola. % $SbCl_3$. The compd. $Et_2O \cdot 2SbCl_3$ was established. This compd. is held responsible for the elec. cond. of the system. XVI. Electrical conductivity and viscosity of the system chloromethyl ether arsenic trichloride. *P. I. Terpigunov. Ibid.* 235-9. Viscosity of the system $CH_3ClOC_2H_5 \cdot AsCl_3$ in all concns. was measured at 0°, 10°, 20°, 30°, 40° and 50°. Isotherms indicate the compd. $CH_3ClOC_2H_5 \cdot AsCl_3$. Elec. cond. isotherms for the same system were detd. at 0°, 10°, 20°, 30° and 40°. Cond. curves confirm the above conclusion. Introduction of Cl into the ether mol. decreases the tendency for complex formation with chlorides of the elements of the 5th group of the periodic system. *S. L. M.*

1ST AND 2ND ORDER										PROCESSES AND PROPERTIES INDEX										3RD AND 4TH ORDER									
<p>BC</p> <p>2-1</p> <p>Nature of electrolytes in non-aqueous solutions. M. I. Ushakov (Dokl. Akad. Nauk SSSR, 1985, 44-49). Conf. Non-aq. Electrochem., Kiev, 1985, 44-49). Conductivity is associated with compound formation. R. T.</p>																													
<p>ASB-31A METALLURGICAL LITERATURE CLASSIFICATION</p>																													
1ST AND 2ND ORDER										3RD AND 4TH ORDER										5TH AND 6TH ORDER									



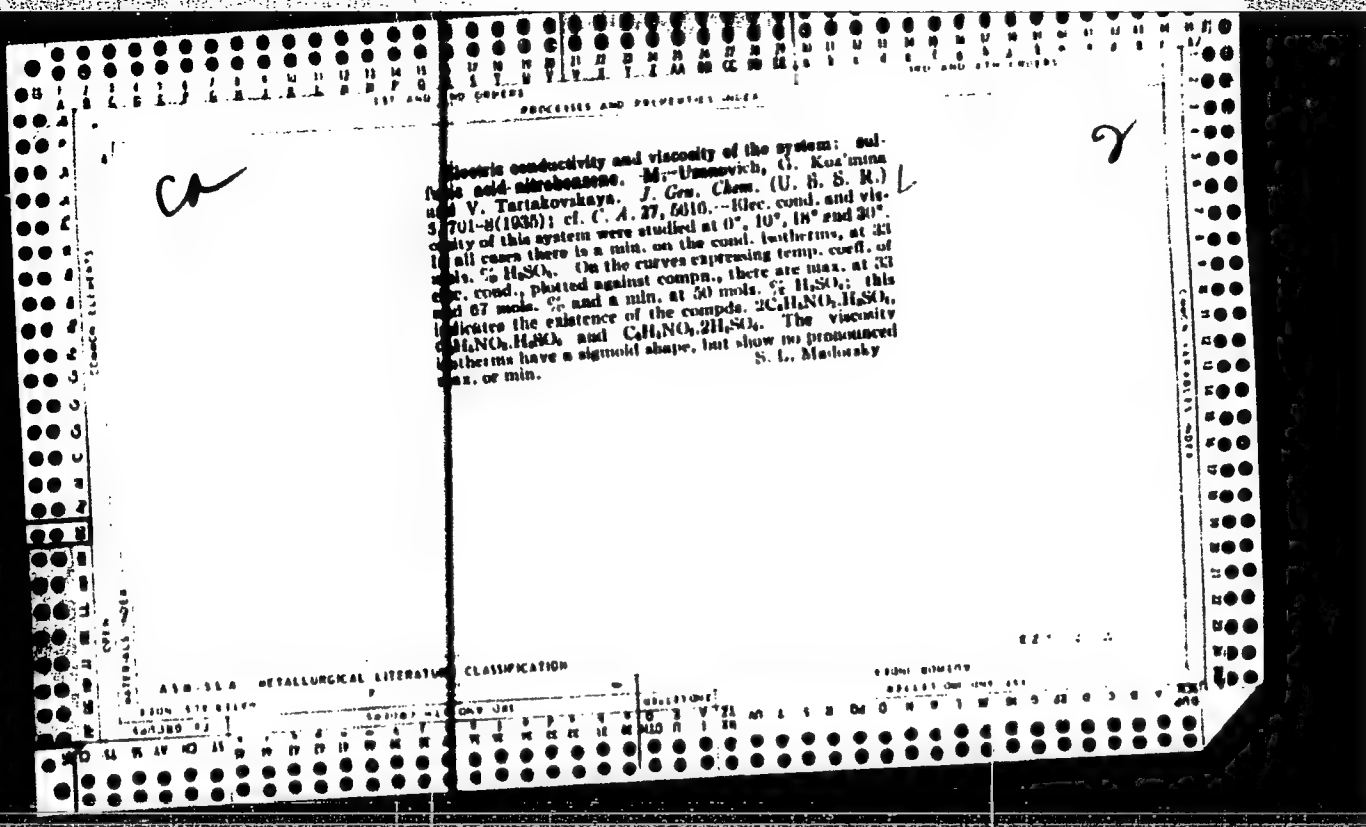
Anomalous electric conductivity. M. Usanovich. (*Compt. rend. acad. sci. U. R. S. S.*, 1918-20 (German 521-4) (1935).)—Anomalous cond., defined as a decreasing equiv. or mol. cond. when the diln. is increased, is ascribed to the formation of complex compds. between the solvent and solute. R. R. Smith

R. R. Smith

ASIA. I. LA METALLURGICAL LITERATURE CLASSIFICATION

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PROCESSING AND PROPERTY INDEX																			
<p>1.4</p>										<p>1.5</p>									
<p>Attempt at a chemical theory of electrolytes. M. Umemoto, <i>Acta Physicochim.</i> U. R. S. S. 3, 703-10 (1933) (in English).—A rational quant. theory, applying to all electrolytes at all concns., based on the partly published exptl. work of the author, divides them into 2 systems; in one the components form no compds. and in the other the electrolyte is a compd. formed between the components. In the first case, cond. is detd. by conducting autocomplexes, such as Hantzsch's sulfonium sulfate and nitronium nitrate (C. A. 19, 2312), since this accounts for the continuous fall in cond. with diln. observed by U. An equation, based on the mass law is derived, relating elec. cond. to concn. The differences between strong and weak electrolytes are due to the greater degree of combination of the former with the solvent. The cond. of the soln. depends chiefly on the concn. of the true electrolyte. E. R. Rushton</p>																			
<p>ASAC SLA METALLURGICAL LITERATURE CLASSIFICATION</p>																			
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PROCESSES AND PROPERTIES INDEX																									
<p>Assembly of the system: acetic acid-nitrobenzene. M. Usanovich and A. Tenenbaum. <i>J. Gen. Chem.</i> (1958, U.S.S.R.) 8, 706-11(1958); cf. preceding abstr.—Vis- cosity of this system was studied at 20°, 40°, 60° and 80°. The isotherms show absence of chem. reaction between the 2 compds. The system is nonconducting; this confirms the rule that a system of 2 nonconducting compds. is conducting only when they enter into chem. reaction. S. L. Madorak.</p>																									
<p>ASB-SLA METALLURGICAL LITERATURE CLASSIFICATION</p>																									

Electric conductivity of the system: sulfuric acid-
acetic acid. M. Umanov and A. Naumova. *J. Gen.
Chem. (U. S. S. R.)* 5, 712-18 (1936); cf. 2 preceding abstrs.
The cond. of this system was measured at 0°, 10°,
20°, and 30°. The curve showing temp. coeff. of elec. cond.
plotted against concn. has a max. at 33 mole % H_2SO_4 ,
indicating the compd. $2\text{CH}_3\text{COOH} \cdot \text{H}_2\text{SO}_4$. There is also
the indication of $\text{CH}_3\text{COOH} \cdot \text{H}_2\text{SO}_4$. S. L. M.

ASB-52A DETALLURGICAL LITERATURE CLASSIFICATION

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viscosity curves of internal friction. M. Usanovich, *J. Gen. Chem.* (U. S. S. R.), 3, 901-1001 (1953).—The existence of a new type of viscosity diagram for a binary system is characterized by the fact that the curves do not pass through a maximum, but rather a minimum. Such a diagram is obtained in those cases where the components react to form a compound with a lower viscosity than that of one of the components. This happens when one of the components is an associated liquid and the product of reaction is a normal liquid, e. g., H_2SO_4 - $\text{C}_6\text{H}_5\text{NO}_2$; AsCl_3 - $(\text{C}_6\text{H}_5)_3\text{N}$. The inflection points on these types of isotherms shift with rising temp. toward the liquid with the higher viscosity when η_{AB} is less than $(\eta_A + \eta_B)/2$, where η_A , η_B and η_{AB} are viscosity coeffs. of the components A and B and of the product of reaction AB , resp., or toward the liquid with the lower viscosity when η_{AB} is greater than $(\eta_A + \eta_B)/2$. S. L. Madorsky

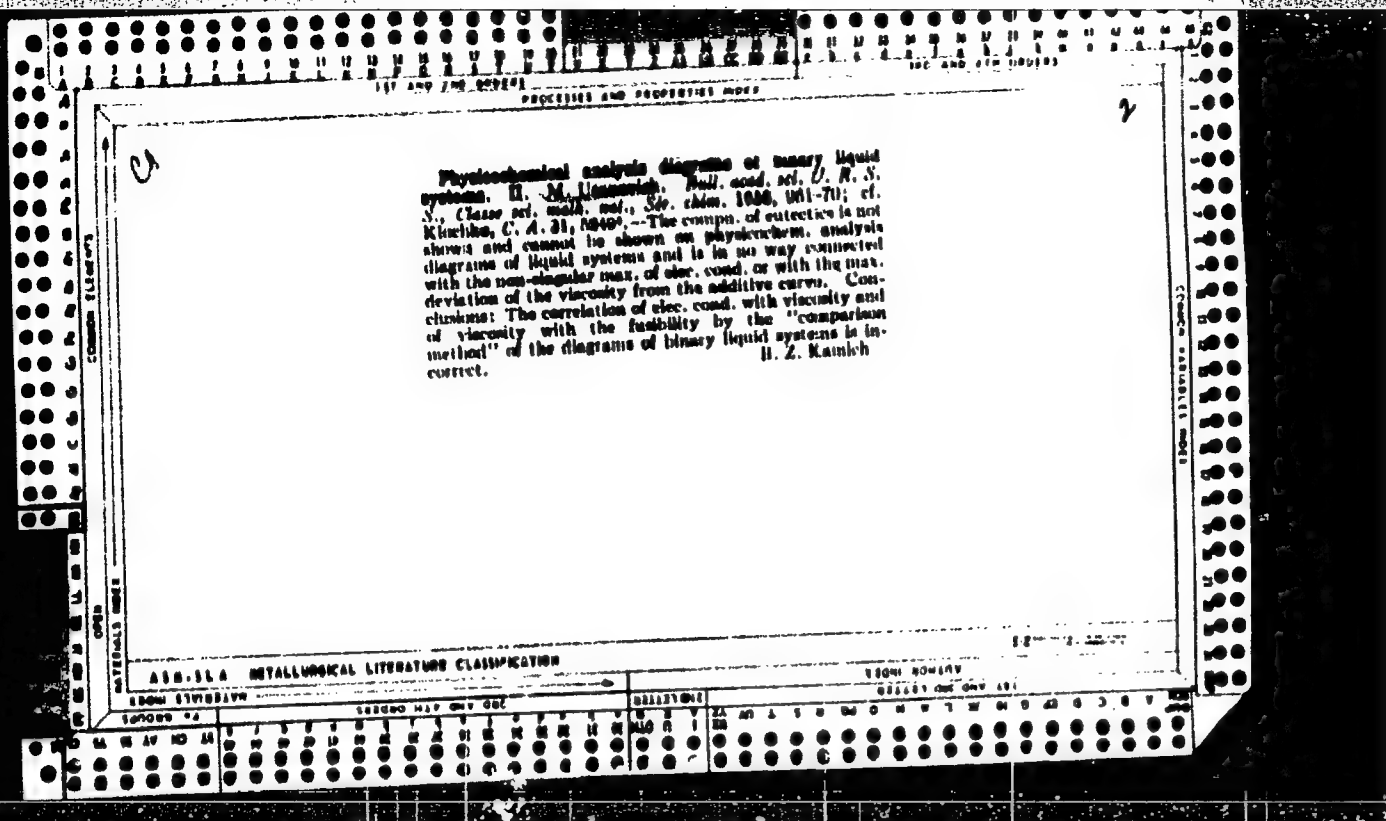
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Diagram of physicochemical analysis of irrational systems. M. Usanovich. *J. Gen. Chem.* (U. S. S. R.) 3, 1787 (1933); *cf.* C. A. 29, 4230. - Polemical. A reply to some remarks on U.'s work in a paper by V. Kachumtsev [*J. Gen. Chem.* (U. S. S. R.) 3, 102 (1933)].
S. L. Malorshy

ALSO SEE METALLURGICAL LITERATURE CLASSIFICATION

Reaction of neutralization in sulfuric acid as a solvent
M. Usanovich. *Acta Physicochim. U. R. S. S. R.*, 407 (1957) (in English).—Preliminary report on the use of H_2SO_4 as a solvent in acidimetry and alkalimetry. W. George Parks

ASME 34A METALLURGICAL LITERATURE CLASSIFICATION

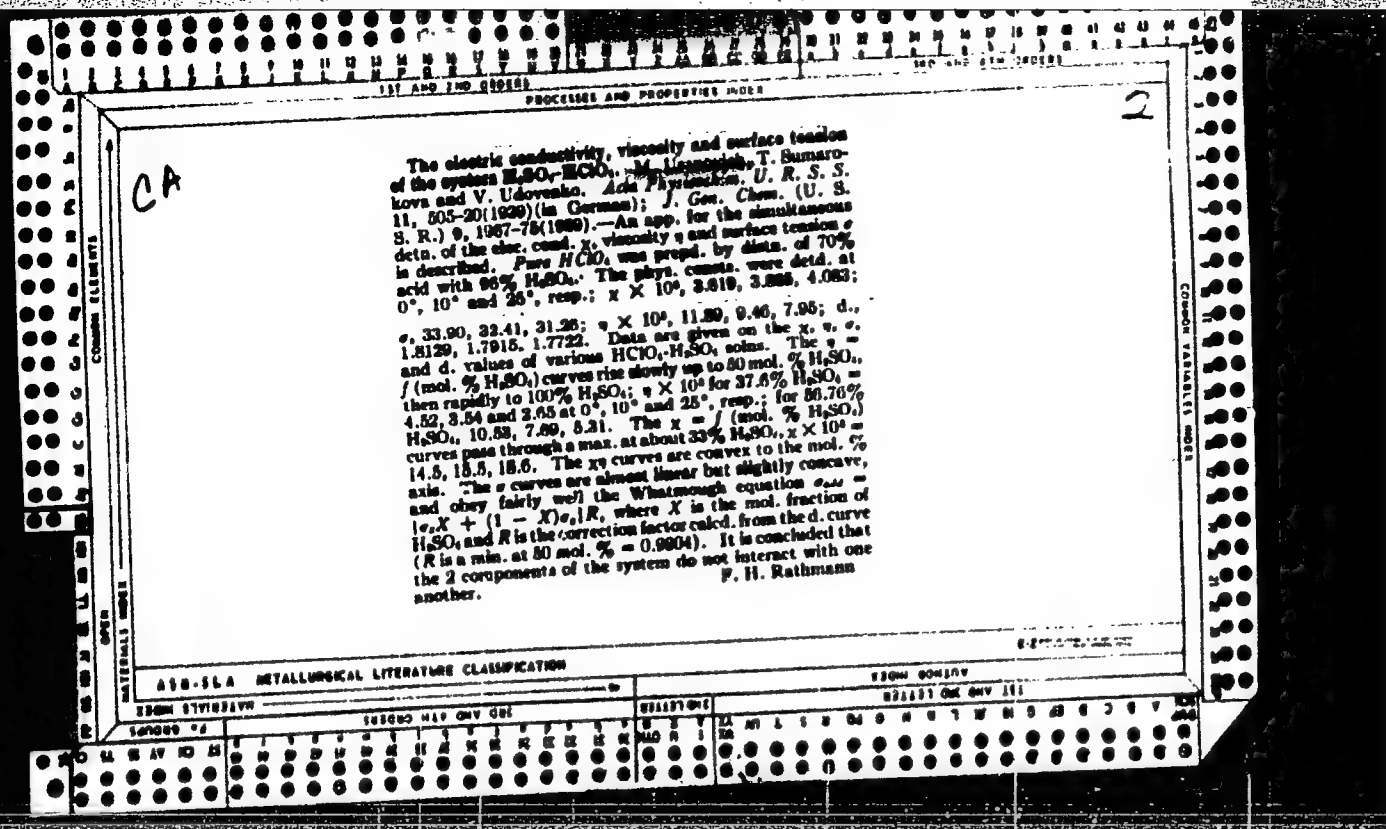


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7-1

Conductivity, viscosity, and surface tension in the system $\text{H}_2\text{O}-\text{HClO}_4$. M. UZANOVITICH, T. SUMAROKOVA, and V. UDOVENKO (J. Gen. Chem. Russ., 1939, 9, 1967—1975).—Conductivity, η , and surface tension data for the system at 0°, 10°, and 25° do not suggest compound formation. The max. on the conductivity-composition curve is ascribed to lowering of the η of the system with increasing $[\text{HClO}_4]$. R. T.

Lob. Phys. Chem., Central Asiatic State U.



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<p>The negative temperature coefficient of electrical conductivity of solutions. M. Usanovich. <i>Compt. rend. acad. sci. U. R. S. S.</i> 23, 608-9 (1939) (in German).— From the assumption of Arrhenius that cond. of a soln. is inversely proportional to η, the following equation is obtained: $(1/\eta)(\partial\eta/\partial T) = (1/\sigma)(\partial\sigma/\partial T) - (1/\eta)(\partial\eta/\partial T)$ where σ = sp. cond., η = viscosity and σ = the so-called "corrected" cond. Neg. coeffs. of cond. (at ordinary temp.) are observed in solns. having low η. G. A.</p>					
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1ST AND 2ND ORDERS										3RD AND 4TH ORDERS									
PROCESSES AND PROPERTIES INDEX																			
<p>2</p> <p>CRYSTALLINE STUDY OF THE SYSTEMS PHENOL-ANILINE, PHENOL-DIMETHYLANILINE AND PHENOL-DIETHYLANILINE. V. V. UDOVICHENKO and M. I. HOSSEINICH. <i>J. Gen. Chem. (U.S.S.R.)</i> 10, 17-20 (1960); cf. preceding abstract. The mol. wts. were found from the changes in the T_g of PhNH₂, Ph-NMe₂, and PhNEt₂, and their mixts. with PhOH in C₆H₆ by the method previously described. Similar procedure was used in the detn. of mol. wts. of PhNH₂ and its alkyl deriva. in PhOH. The inconclusive results indicate that the mol. wts. of the mixts. with PhOH in C₆H₆ are higher than the calcd. values; this can be explained by the formation of chem. compds. in the systems. The mol. wts. of anilines in PhOH decrease with increasing concn., approaching the normal values.</p> <p>Chas. Blanc</p>																			
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The nature of nitrating mixtures. I. M. Usanovich. *J. Gen. Chem. (U. S. S. R.)* 10, 219-22 (1940).—The action of mixts. of HNO_3 with other substances in the nitration of org. compds. is discussed in the light of the previous theory of the acid-base functions of HNO_3 and the coordinated unsatd. state of atoms (ions) of the reacting compds. (cf. *C. A.* 33, 6285). The function of H_2SO_4 in a nitrating acid as a water-binding agent is refuted, because the reaction: $\text{C}_6\text{H}_6 + \text{HNO}_3 \rightarrow \text{PhNO}_2 + \text{H}_2\text{O}$ is not reversible. Chichibabin, believing that the nitrating agent is the HNO_3 mol. and not its ions, assumed that the function of H_2SO_4 is to inhibit the disson. of HNO_3 by the H_2O formed in the reaction. This is equally untenable since the disson. const. of H_2SO_4 is greater than that of H_2O and the disson. of HNO_3 in H_2SO_4 ($\text{HNO}_3 \cdot \text{H}^+ + \text{NO}_3^-$) will not be lower than in H_2O (cf. Hantzsch, *C. A.* 2, 630). Studies of the elec. cond. of HNO_3 binary mixts. (unpublished) revealed the amphoteric nature of HNO_3 . It acts as an acid toward H_2O and as a base toward H_2SO_4 and H_2PO_4 . The acid-base function of HNO_3 is shown in its reaction with AcOH and $\text{C}_6\text{H}_5\text{CO}_2\text{H}$, acting as an acid and base, resp., and in its failure to form compds. with $\text{CH}_3\text{CO}_2\text{H}$ and $\text{CHCl}_3\text{CO}_2\text{H}$ (cf. Kolthoff and Willman, *C. A.* 28, 3644). Preliminary tests indicate that in aq. H_2SO_4 or in the presence of basic compds. the nitration of aliphatic compds. is due to the anion NO_3^- , but in concd. H_2SO_4 , the active agents of nitration of aromatic compds. are the cations $[\text{NO}(\text{OH})_2]^+$ and $[\text{NO}(\text{OH})_2]^+$ (cf. Lauer and Oda, *C. A.* 30, 3791).

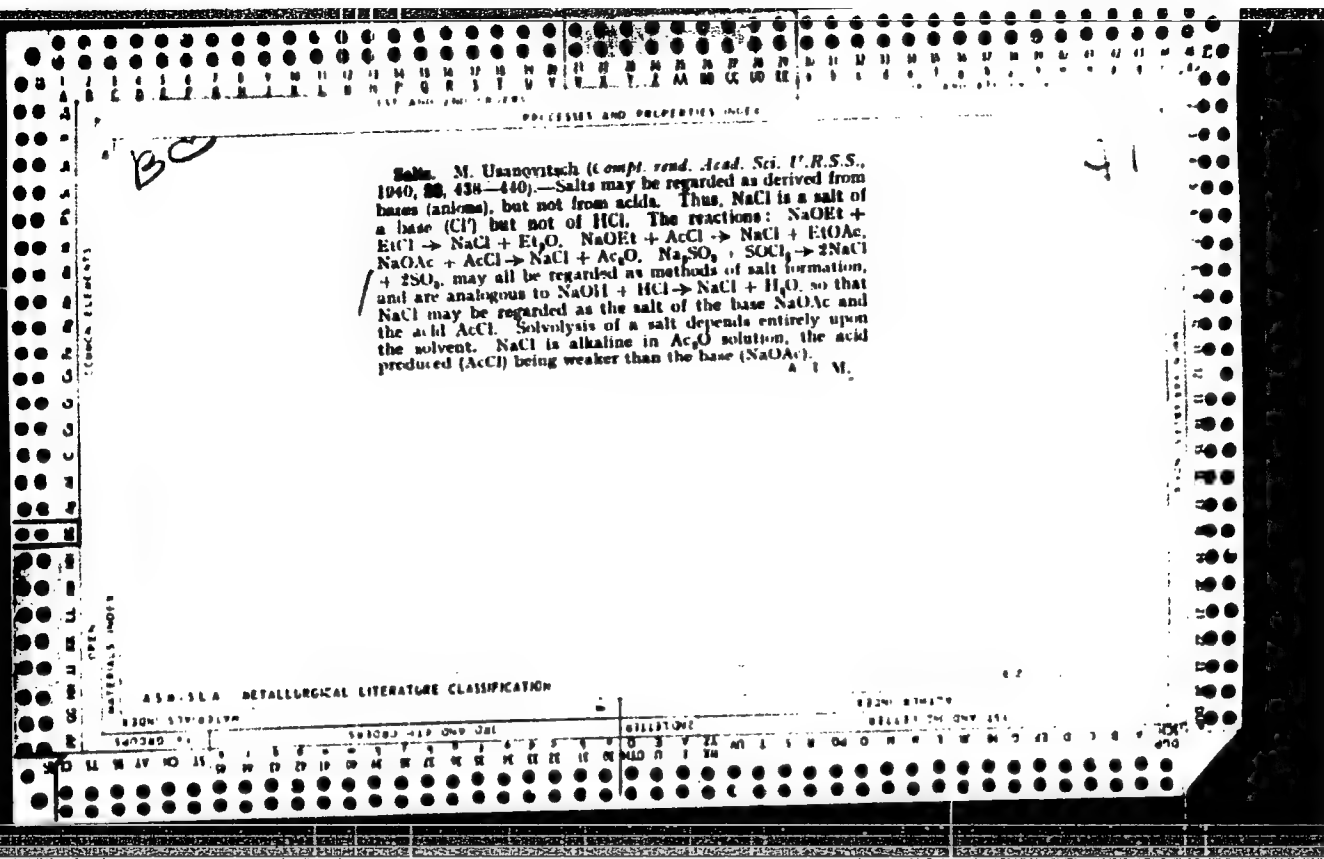
AS 5-51.4 METALLURGICAL LITERATURE CLASSIFICATION

Lab. Phys. Chem., Central Asia State U.

II. Nitration of toluene in the presence of acetic acid and nitrobenzene. M. Usanovich and Sh. Abdulov. *Ibid.* 223-6.—To study the effect of diluents, which are basic to HNO_3 , on the nitration of alkylated C_6H_5 , 53 ml. PhMe was treated on a water bath at 90°C for 3.5 hrs. with HNO_3 (d. 1.52) dil. with various proportions of AcOH , m. 10%, and PhNO_2 . The graphic results show that with increasing concn. of the solvent in the nitrating mixt. the relative yields of PhCH_2NO_2 increase and those of $\text{MeC}_6\text{H}_4\text{NO}_2$ decrease. The mix. yield (4.3 g.) was with a mixt. of 20% HNO_3 and 80% AcOH and 60% HNO_3 and 40% PhNO_2 . Practically no PhCH_2NO_2 is formed at concns. of 5-10% HNO_3 . At concns. of 5-10% HNO_3 PhMe is substituted only in the nucleus $\text{C}_6\text{H}_4\text{NO}_2$ were formed. The nitration is accompanied by oxidation of PhMe to HCO_2H , the yields of which increase with greater diln. of HNO_3 . The results show that in the nitration of org. compds. AcOH , PhNO_2 (and H_2O) act as bases and not as inert solvents. III. Nitration of toluene in the presence of sulfuric acid and trichloroacetic acid. M. Usanovich and I. Glukhov. *Ibid.* 227-9.—Proceeding as above, PhMe was treated with HNO_3 in the presence of various proportions of H_2SO_4 (d. 1.84) and recrystd. $\text{CCl}_3\text{CO}_2\text{H}$. The substitution takes place in the ring with only traces, if any, of PhCH_2NO_2 formed.

With increasing relative concn. of H_2SO_4 in the mixt. the yields of $MeC_6H_4NO_2$ and $MeC_6H_3(NO_2)_2$ increase (no $MeC_6H_2(NO_2)_3$ is formed). The max. yield of about 90% $MeC_6H_4NO_2$ is obtained with a mixt. contg. 40-60% HNO_3 . With further diln. the yield of $MeC_6H_4NO_2$ decreases sharply and none is formed with 15% HNO_3 . The yield of $MeC_6H_3(NO_2)_2$ increases with HNO_3 concn. to a max. of 85% with 85-90% HNO_3 . CCl_3CO_2H acts analogously, but forms only $MeC_6H_4NO_2$ and no di- NO_2 deriv. Thus, in the presence of a diluent, which is acid to HNO_3 , the nitration is directed toward the ring. IV. Nitration of toluene in the presence of monochloroacetic acid and ethyl nitrate. M. Usanovich and F. Sushkevich. *Ibid.* 230-2. It is shown that the elec. cond. of HNO_3 decreases with increasing diln. with the inert solvents of CH_2ClCO_2H and $EtNO_2$. As a result of the decreasing concn. of HNO_3 cations and anions the nitration of the ring and the side chain progressively decreases. The yields of 79.0% $MeC_6H_4NO_2$ and 53% $PhCH_2NO_2$ at a concn. of 80% HNO_3 decreased to 10 and 3%, resp., with 10-13% HNO_3 . The formation of $BrOH$ decreased similarly with diln. of HNO_3 . Chas. Blanc

COMMON ELEMENTS										COMMON VARIABLES INDEX									
117 AND 118 GROUPS										PROCESSES AND PROPERTIES INDEX									
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Lab. Phys.-Chem., Central Asia State U.										<p>Maximum specific electric conductivity. M. Usanovich. <i>J. Gen. Chem.</i> (U. S. S. R.) 10, 959-61(1940).—It is math. proved that the universally accepted explanation of a max. sp. cond. (an increase in concn. decreasing dissoci.) is contrary to the Ostwald's diln. law, which requires an increase in sp. cond. with increase in concn. A max. sp. cond. in systems in which the electrolyte is neither of the components of the system but the product formed, appears because of increase in the concn. of this electrolyte according to the mass-action law. In systems that form no compds. and the cond. of which depends upon the cond. of one of the components, a max. appears as a function of the relation of viscosities of the components. Previously published exper. (<i>J. Phys. Chem.</i> (U. S. S. R.) 6, 928 (1936)) agree with the following deduction: in sp. cond. corrected for viscosity there is a max. cond. in those cases in which the components of the system form compds. that are conductors; there is no max. in those cases in which the components of the system do not form definite chem. compds.</p> <p>A. A. Podgorsky</p>									
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<p><i>Ca</i></p> <p style="text-align: right;"><i>2</i></p> <p style="text-align: center;">V. Nizolski as a contemporary of Aristarchus. M. I. <i>Vysokomirskii Uspehi Khim.</i> 10, 540-51(1941). V. H. Rathmann</p>																																			
<p style="text-align: center;">ADDITIONAL METALLURGICAL LITERATURE CLASSIFICATION</p>																																			
<p style="text-align: center;">CLASSIFICATION</p>																																			

The temperature dependence of the specific conductivity of solutions. M. Dornreich, J. Gen. Chem. (U.S.S.R.), 11, 728-6 (1941); see also cond. of a soln. is inversely proportional to its viscosity, i.e., $\kappa = \sigma/\eta$, where σ is the corrected spec. cond. Thence $(1/\sigma)(d\sigma/dT) = (1/\sigma)(d\eta/dT) - (1/\eta)(d\eta/dT)$. Thus the temp. coeff. of the specific spec. cond. is the difference between the temp. coeff. of the viscosity and the temp. coeff. of viscosity. Hence the temp. coeff. of viscosity is always neg. from (1) it follows that the temp. coeff. of the elec. cond. may be neg. even when $(1/\eta)(d\eta/dT)$ is its abs. value is less than $(1/\sigma)(d\sigma/dT)$; in which case the last expression is neg. 30 references. A.A. Boettlinger.

ASH-SLA METALLURGICAL LITERATURE CLASSIFICATION

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COMMON ELEMENTS		PROCESS AND PROPERTIES INDEX		COMMON VARIABLE INDEX	
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<p>S-shaped viscosity diagrams. M. I. Lomonovskii, <i>Abstr. Nauk S.S.S.R., Otdel. Tekh. Nauk, Inst. Mashinostroyeniya, Soveshchaniya po Vysokosti Zhidkosti i Kolloid. Rasstoyaniya (Conf. on Viscosity of Liquids and Colloidal Solns.)</i> 2, 85 M(1944).—Several binary systems were analyzed to ascertain whether S-shaped η (viscosity)—compn. curves actually are the result of a disappearance of the max. at a sufficiently high temp., as was claimed by N. B. Kurnakov (cf. C.A. 33, 8485) for the system $\text{C}_{12}\text{H}_{11}\text{SbCl}_2$. To this end, the temp. deriv. $d\eta/dt$ was plotted against compn. for the system $\text{C}_{12}\text{H}_{11}\text{NO}_2\text{—H}_2\text{SO}_4$, above and below the m.p. of the compd. (11.6°). The values of $d\eta/dt$ increase with rising temp. and show no tendency to pass through zero. Consequently, there is a hint of a max. of η at a lower temp. The same was found for the systems $\text{H}_2\text{O—AsCl}_3$ and $\text{CHCl}_3\text{—COOH—HClO}_4$. The correct interpretation of S-shaped curves is that one of the components is assocn. to a higher degree than the compd. the formation of which results in a simplification of the compn. of the system. Such systems cannot have a max. no matter how much the temp. is lowered. As a rule, the curvature tends to become less with rising temp. In some</p>		<p>curves, however, the inflection is absent at low temp. and appears only at some higher temp., becoming more pronounced with further rise of the temp. This is observed in the system <i>m</i>-cresol-dimethylaniline, where at 9° the η isotherm is convex to the axis of compn., has an inflection at 55° and becomes distinctly S-shaped at 111°. In the system phenol-pyridine, the 25° and 40° isotherms are S-shaped; from 50° up, a max. appears, which on further rising temp. shifts towards the phenol. This is a case where a max., absent at lower temp., appears at higher temp., and it runs counter to Kurnakov's postulated appearance of a max. of η on lowering the temp. The last 2 systems have this in common that the temp. coeff. of η of either phenol or <i>m</i>-cresol is greater than that of the stable compd. formed. Change of temp. changes the ratio of η of one of the components and the compd.; with rising temp., η of the compd. grows faster than η of the more viscous component and this, combined with the stability of the compd., leads to the appearance of a max. The underlying fact is the considerable assocn. of phenols at low temp. and its rapid drop at higher temp. Conclusion: S-shaped η curves cannot be interpreted by a disappearance of a max. due to raised temp. N. Thon</p>			
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10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100					

<p>2</p> <p>Electroconductivity and viscosity of the system $\text{CH}_3\text{CO}_2\text{H}-\text{CH}_3\text{COCl}$. M. Umanovich and L. N. Vasil'eva. <i>J. Gen. Chem. (U.S.S.R.)</i> 18, 1302-3 (1946) (in Russian).— The cond. and viscosity of the system $\text{AcOH}-\text{AcCl}$ at 25° and 35° were detd. and the results are presented graphically. The presence of a cond. max. indicates the existence of interaction between the components on an acid-base basis, with formation of a complex $(\text{AcOH})\text{Cl}$, in which AcCl acts as the acid and AcOH as the base. Green color of methyl violet in AcCl and violet color in AcOH show the former to be the stronger acid. G. M. Kosolapoff</p>																									
<p>ASB-SLA METALLURGICAL LITERATURE CLASSIFICATION</p>																									
<p>GROUPS</p>																									

1ST AND 2ND ORDER PROCESSES AND PROPERTIES INDEX	
<p><i>cd</i></p> <p>Acid-base properties of acetonitrile. 1. Interaction between acetonitrile and acids. M. Usanovich and V. Dulova. <i>J. Gen. Chem. (U.S.S.R.)</i> 16, 1975-86(1946) (in Russian); cf. <i>C.A.</i> 39, 4540⁺.—The basic behavior of CH_3CN towards CH_3COOH, CH_3COCl, $\text{C}_6\text{H}_5(\text{NO}_2)_2\text{OH}$, CH_3CICOH, CCl_3COOH (the acid character increasing in that order) is demonstrated by detns. of viscosity η and sp. elec. cond. κ of the corresponding binary systems. In $\text{CH}_3\text{CN}-\text{CH}_3\text{COOH}$, the 0° and 25° η isotherms are concave to the axis of compn., the latter somewhat less than the former; in the other 4 remaining systems, the η isotherms are convex. In all 5 systems, the κ isotherms (at 0, 25, 50°; 0, 25°; 25, 50°; 25, 50°, resp., in the order given above) have a distinct max.; $\text{CH}_3\text{CN}-\text{CH}_3\text{COOH}$ shows two max. (at about 20 and 40 mol. % CH_3COOH), sep'd. by a min. The max. is preserved on the corresponding κ curves; $\text{CH}_3\text{CN}-\text{CH}_3\text{CICOH}$ again shows two max. sep'd. by a min.; $\text{CH}_3\text{CN}-\text{CH}_3\text{CICOH}$ and $\text{CH}_3\text{CN}-\text{C}_6\text{H}_5(\text{NO}_2)_2\text{OH}$ show an inflection but the max. expected beyond it cannot be attained owing to limited soly. The special case of CH_3COOH (two max. of κ and η) is also reflected in the curves of the temp. coeff. of elec. cond. which show inflections. On the basis of the κ curves, the acid character towards CH_3CN increases in the order CH_3COOH, CH_3COCl, $[\text{C}_6\text{H}_5(\text{NO}_2)_2\text{OH}]$, CH_3CICOH, CCl_3COOH: indicators (picric acid, malarin green, methyl violet, tropaeolin OO, dimethyl yellow, α-dinitrophenyl, Congo red, methyl orange, benzene-α-naphthylamine, chrysoidin, methyl red, p-nitrophenol, neutral red) gave the order CH_3COOH, $[\text{CH}_3\text{COCl}$, $\text{C}_6\text{H}_5(\text{NO}_2)_2\text{OH}]$, CH_3CICOH, CCl_3COOH. The basic properties of CH_3CN may be linked with the structure $\text{CH}_3\ddot{\text{C}}:\ddot{\text{N}}$, i.e. be det'd. by the presence of the neg. unbind. N.</p> <p style="text-align: right;">N. Thom 8-27-75-2-2000</p>	
<p>AD-514 METALLURGICAL LITERATURE CLASSIFICATION</p> <p>ROOM NUMBER 01111 One One One</p>	

Electrical conductivity and viscosity of the system H_2SO_4 -
 CCl_3COOH . M. D. Gerasimov and V. P. Tsvetkovskaya (Siberian
 Phys. Tech. Inst. and Kazan Univ.). J.
 Gen. Chem. (U.S.S.R.) 16, 1987-90 (1946) (in Russian).
 Elec. cond. κ was measured at 20° from 100 to 71.8 mol.
 % H_2SO_4 , at 40° from 100 to 87.8 mol. %, at 60° from 100
 to 0.78 mol. %; κ falls continuously and rapidly from
 0.033 ohm.⁻¹ cm.⁻¹ for pure H_2SO_4 (at 60°) to practically
 zero for pure CCl_3COOH ; the curves for 20° and 40°
 are parallel to that for 60°, κ falling to very nearly zero at
 the compo. given above. The curve of mol. cond. Λ
 for H_2SO_4 falls abruptly to nearly zero at a diln. of about
 100:1 and remains fairly const. on further diln. The av.
 temp. coeff. of κ between 40 and 60° is about 8%. The
 viscosity η falls uniformly from pure H_2SO_4 ($\eta = 0.105$
 at 60°) to pure CCl_3COOH ($\eta = 0.088$); the curve is
 convex to the axis of compo. and is characteristic of a
 system of noninteracting assoc. components. The ab-
 normal shape of the κ and Λ curves can be interpreted by
 ascribing the elec. cond. to ionization of sulfonium sulfate
 (Hantzsch) formed through assoc. of H_2SO_4 due to its
 amphoteric nature; diln. with the indifferent solvent
 CCl_3COOH results in decompn. into the simple H_2SO_4 ,
 mole., not susceptible of ionization in that medium.
 N. Thon

PROCEDURES AND PROPERTIES INDEX																									
CA													5												
<p>The systems formed by perchloric acid with acetic acid and its chlorine derivatives. T. Sumarokova and M. Lianovich (Middle Asia State University, Tashkent). <i>Acta Physicochim. U.R.S.S.</i> 21, No. 5, 841-8 (1946).—The cond., viscosity, and d. of the systems formed by HClO₄ with AcOH, as well as with the mono-, di-, and tri-chloro deriva. of AcOH, were studied. Mixing of HClO₄ and CCl₃COOH is accompanied by expansion, whereas with the other systems contraction occurs. The compds. CHCl₂COOH.2HClO₄, CHCl₂COOH.HClO₄, CH₂ClCOOH.HClO₄, and 2AcOH.HClO₄ were detected. The strength of the acidic bases appears to increase in the series CHCl₂COOH, CH₂ClCOOH, AcOH. E. G. V. H.</p>																									
<p>ASO-SLA METALLURGICAL LITERATURE CLASSIFICATION</p>																									

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2

Electroconductivity, viscosity, and density of binary systems formed by HClO_4 . III. The system HClO_4 - CHCl_3COOH . T. Sumarokova and M. Usanovich. *J. Gen. Chem.* (U.S.S.R.) 17, 157-62 (1947) (in Russian); *ibid.* C.A. 41, 6706g, 7216i. Viscosity-concn. curves are S-shaped, values for HClO_4 and for CHCl_3COOH at 20° being 0.00466 and 0.0420; at 35°, 0.00880 and 0.0200; and at 50°, 0.01342 and 0.01700 poises. The cond.-concn. curves rise to rather sharp max. at a concn. of HClO_4 of 79.5 mole %, the values of the max. cond. at 20, 35, and 50° being 0.02587, 0.02020, and 0.02018 ohm⁻¹cm⁻¹. The curve of l/d. against concn. is slightly S-shaped, deviating somewhat from a straight line. Values of d. for HClO_4 and CHCl_3COOH at 20° are 1.778 and 1.526 g./cc. The data are interpreted to indicate the existence of two binary compds. with the formulas $2\text{HClO}_4 \cdot \text{CHCl}_3\text{COOH}$ and $\text{HClO}_4 \cdot \text{CHCl}_3\text{COOH}$, with CHCl_3COOH being basic

relative to the HClO_4 . IV. The system HClO_4 - CH_3COOH . M. Usanovich and T. Sumarokova. *Ibid.* 163-8. Viscosity-concn. curves show max. at a concn. of HClO_4 of about 32.7 mole % at 35 and 50°, but crystn. of CH_3COOH prevents observation of max. at 20°. Values of max. viscosity at 35 and 50° are 0.05981 and 0.02441 poises. Cond. curves show max. at about 80 mole % HClO_4 , values for cond. of HClO_4 being 0.02250, and of CH_3COOH less than 0.001, (very small temp. dependence), and the max. cond. at 20, 35, and 50° being 0.05261, 0.06360, and 0.07778 ohm⁻¹cm⁻¹. The curve of temp. coeff. against HClO_4 concn. is S-shaped, rising from practically 1.0 for 100 mole % HClO_4 to about 4.0 below 23 mole % HClO_4 . The curve of l/d. against concn. is convex towards the concn. axis; at 20°, e.g., it rises from 0.57 for 100 wt. % HClO_4 to 0.66 for 20 wt. % HClO_4 . The formation of one compd. is indicated, having the formula $\text{HClO}_4 \cdot \text{CH}_3\text{COOH}$, the latter being basic relative to the former. Arild J. Miller

USANOVICH, M.

Usanovich, M., and Sumarokova, T.- "Electroconductivity, Viscosity and Density of Binary Systems of Binary Systems formed by HClO_4 . IV. The System HClO_4 - CH_2ClCOOH ." (p. 168)

SO: Journal of General Chemistry, (Zhurnal Obshchei Khimii), 1947, Vol.17, No. 2.

1ST AND 2ND ORDER		PROCESS AND PROPERTIES INDEX		3RD AND 4TH ORDER	
CA		10			
<p>Acid-base properties of acetonitrile. II. Interaction of acetonitrile with bases. M. Umanovich and V. Dulova. <i>J. Gen. Chem. (U.S.S.R.)</i> 17, 608-72(1947) (in Russian); cf. <i>C.A.</i> 41, 8793d. (1) In the system MeCN-picoline (mixture of isomers), the viscosity (η) isotherms at 0° and 25° are slightly convex to the axis of compn., the 50° isotherm is a straight line. The curves of elec. cond. (κ), at 0°, 25°, and 50°, have a high max. at about 80 mol. % MeCN; the κ plot shows a sharp max. (at about 85 mol. % MeCN), indicating acid-base interaction. In the electrolysis of mixts. of the compn. corresponding to the max. of κ, the Ag anode was dissolved and $C_{11}H_8$ was evolved on the platinized Pt cathode. On the assumption of a complex $B \cdot MeCN$ (B = base), ionized into $B \cdot Me^+$ and CN^-, the discharged cation dissociates into $B + Me$ with subsequent recombination of 2 Me. Indicators with transition above pH 8 show acid reaction in MeCN and basic reaction on addition of picoline. (2) The η isotherms of MeCN-Me₂CO, concave to the axis of compn., indicate some degree of interaction. Its real η, in contrast to the explanation by errors due to volatilization of Me₂CO, was corroborated by data of the apparent mol. wt. giving curves concave to the axis of abscissas except at extreme dilns. On the other hand, indicators show no change of reaction on admixing Me₂CO to MeCN. Consequently, Me₂CO and MeCN have approx. the same acid-base character and their interaction is merely dipole assocn. N. Thon</p>					
<p>ASAC-51A METALLURGICAL LITERATURE CLASSIFICATION</p>					
<p>FROM LITERATURE</p>					
<p>SEARCHED MAP ONLY USE</p>					
<p>CLASSIFICATION</p>					

[illegible]

14.51 $\times 10^{-4}$. $\text{SnCl}_4 \cdot 2\text{AcOH}$ is a stronger acid than AcOH , with which, through acid-base interaction, it forms $[\text{SnCl}_4 \cdot 2\text{AcOH}]\text{AcOH}$ (analogous to $\text{H}_2\text{SO}_4 \cdot \text{AcOH}$) identical with the known $\text{SnCl}_4 \cdot 3\text{AcOH}$. (2) In SnCl_4 + HCOOH , sepns. into 2 liquid layers occurs from 25 mole % SnCl_4 upwards and persists even at 70° . One layer is SnCl_4 and the other is a very fluid, turning liquid, highly viscous, the other is a very fluid, turning liquid. The amt. of the viscous liquid increases with increasing SnCl_4 and is predominant at the compn. $\text{SnCl}_4 \cdot 3\text{HCOOH}$ and is predominant at the compn. $\text{SnCl}_4 \cdot 3\text{HCOOH}$. This compd. can be crysd. in red needles, m. 30° . It can also be crysd. by cooling the two-layer liquid, the fluid layer undergoing no change. The homogeneous solns. with less than 25 mole % SnCl_4 evolve CO_2 when treated with KNO_3 . N. Thum

62-111744-1
METALLURGICAL LITERATURE CLASSIFICATION

Processes and Properties of
Electroconductance, viscosity, and density of the binary
systems formed by perchloric acid V. System per-
chloric acid-acetic acid. M. V. Sinovich and T. Sumari-
kova. *Zhur. Khim. i Khim. Khim.* 17, 1115-21
(1947); cf. C. I. 42, 3651/. Measurements were made at
20, 35, and 50°. The viscosity-concn. curves at all temps.
studied have max. at 32.54 mole % HClO_4 . The elec-
trocond. concn. curves at all 3 temps. rise sharply from
pure HClO_4 to a max. at 82.05 mole % HClO_4 , then drop
to a min. at 32.54%, rise to a slight max. at 52.11%, and
then drop to the low cond. of pure AcOH . Values of d
decrease steadily from pure HClO_4 to pure AcOH , values
at 20°, e.g., being: HClO_4 , 1.7716; 51.17 mole % HClO_4 ,
1.5746; 4.66 mole % HClO_4 , 1.1176. Data indicate the
formation of the compd. $\text{HClO}_4 \cdot 2\text{AcOH}$, with no indica-
tion of the previously investigated compd. $\text{HClO}_4 \cdot \text{AcOH}$.
VI. System perchloric acid-water. *Ibid.* 1122-7.
Measurements were made at 20, 50, and 60°. The cond.-
concn. curves rise from the cond. of pure HClO_4 to a slight
max. at 54.31 mole % HClO_4 , then rise rapidly to a sharp
max. at 10.10 mole % HClO_4 , and then drop sharply to the
cond. of pure water. The viscosity-concn. curves go
through a max. at 6.87 (centipoises) at 42.5 mole % HClO_4 .
No d. data are given in the article. The results indicate
the formation of the compds. $\text{HClO}_4 \cdot \text{H}_2\text{O}$ and $\text{HClO}_4 \cdot 2\text{H}_2\text{O}$.
Arld T. Miller

(A

The complex compound $\text{SnCl}_4 \cdot 2\text{AcOH}$. M. I. Ushakov, I. I. Kalabanovskaya. *Izv. Akad. Nauk S.S.S.R. No. 21, 228-30 (1948)*; cf. Stranathan and Strong, *C. I. 21, 3520*.--Cryst. $\text{SnCl}_4 \cdot 2\text{AcOH}$, prep'd by alternately immersing a sealed tube contg. SnCl_4 and AcOH in a mixt. of solid CO_2 and alc., and in melting ice until crystals appeared, using these crystals to seed large vols. of soln., and purifying by fractional freezing, m. $19.3-19.5^\circ$, $d_4^{20} 1.9080$, $d_4^{25} 1.8814$, $d_4^{30} 1.8131$, $n_D^{20} 1.124$, $n_D^{25} 1.1092$, sp. const. at $0^\circ 0.25 \times 10^{-4}$, at $25^\circ 3.33 \times 10^{-4}$, at $50^\circ 14.51 \times 10^{-4}$. It forms $\text{SnCl}_4 \cdot 2\text{AcOH} \cdot \text{H}_2\text{O}$ and $\text{SnCl}_4 \cdot 2\text{AcOH} \cdot \text{Et}_2\text{O}$. Pyridine displaces AcOH to form $\text{SnCl}_4 \cdot 2\text{py}$. M. Hosh

USANOVICH, M.I.

Complexing as acid-base interaction. Izv.AN Kazakh.SSR Ser.khim.
no.3:3-5 '49. (MLRA 9:8)

(Compounds, Complex)

USANOVICH, M.I.

Viscosimetry of binary liquid systems. Izv. Sek. fiz. khim. anal.
18:128-138 '49. (MIRA 11:4)
(Systems (Chemistry)) (Viscosity--Measurement)

USANOVICH, M. I., SHIKHANOVA, N.

Chlorides.

Compound SnCl_4 with $\text{C}_6\text{H}_5\text{COOH}$, Izv. Sekt. plat. i blag. met. no. 25, 1950.

9. Monthly List of Russian Accessions, Library of Congress, April 1953/2 Unclassified.

USANOVICH, M. E.

APPROVED FOR RELEASE: 03/14/2001

CIA-RDP86-00513R001858110016-0

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USANOVICH, M.I.

Acid-base theories. Izv.AN Kazakh.SSR.Ser.khim. no.4:97-105 '51.
(MIRA 9:5)

(Acids) (Bases (Chemistry))

USANOVICH, M.

Chemical Abst.
Vol. 48 No. 4
Feb. 25, 1954
General and Physical Chemistry

Binary systems formed by SnCl_4 , SbCl_3 , and AsCl_3 . I. The $\text{SnCl}_4\text{-CH}_3\text{COOH}$ system. M. Usanovich, T. Sumarokova, and V. Glushchenko (Kazakh Acad. Sci.). *J. Gen. Chem. U.S.S.R.* 21, 1078-81(1951) (Engl. translation); *Zhur. Obshchei Khim.* 21, 981-4(1951); cf. *C.A.* 44, 9853s; 46, 9401i, 9402b. — From singular max. observed in viscosity and cond. isotherms, and shrinkage in sp. vol., evidence was obtained of chem. interaction in mixts. of SnCl_4 and CH_3COOH . Detns. at 50, 60, and 70° gave no definite indications of the compn. of any compds. formed. II. The $\text{SnCl}_4\text{-CCl}_3\text{COOH}$ and $\text{SnCl}_4\text{-CHCl}_2\text{COOH}$ systems. T. Sumarokova and M. Usanovich (Kazakh Acad. Sci.). *J. Gen. Chem. U.S.S.R.* 21, 1079-81(1951) (Engl. translation); *Zhur. Obshchei Khim.* 21, 984-7(1951). — Viscosity and d. isotherms were detd. for the system $\text{SnCl}_4\text{-CCl}_3\text{COOH}$ at 50, 60, and 70°, and for the system $\text{SnCl}_4\text{-CHCl}_2\text{COOH}$ at 35, 50, 60, and 70°. Both systems are nonconductors. The absence of cond., the additivity of vols., and the smooth change of viscosity with compn. are taken as proof there is no chem. interaction in these systems. III. The $\text{SbCl}_3\text{-CH}_3\text{COOH}$ system. M. Usanovich and T. Sumarokova (Kazakh Acad. Sci.). *J. Gen. Chem. U.S.S.R.* 21, 1083-6(1951) (Engl. translation); *Zhur. Obshchei Khim.* 21, 987-90(1951). — D., viscosity, and cond. values were detd. as functions of compn. in the $\text{SbCl}_3\text{-AcOH}$ system at 20, 50, and 60°. D. data show a slight vol. shrinkage in mixts. of the components. The viscosity isotherms exhibit max. at 52-3 mole % SbCl_3 which shift toward higher SbCl_3 values at higher temps. A cond. max. at 70-80 mole % SbCl_3 shifts toward AcOH at higher temp. When cond. values are multiplied by the viscosity of the same solns., the cor. cond. isotherms all attain a max. at a compn. corresponding to $2\text{SbCl}_3\text{AcOH}$. The temp. coeff. of cond. exhibits a max. at the compn. corresponding to SbCl_3AcOH . The latter compd. was reported by B. N. Menshutkin (*C.A.* 6, 1280). The structures of the compds. found are given as $(\text{SbCl}_3\text{AcOH})^+ \text{Cl}^-$ and $(\text{SbCl}_3\text{AcOH})^+ \text{SbCl}_3^-$, the latter existing only in the liquid phase.

Bernard M. Zeffert.

7-24-54

USANOVICH, M.

"Binary systems containing SnCl_4 , SnCl_2 , and AsCl_3 . II. The system SnCl_4 - CHCl_2COOH and SnCl_4 - CHCl_2COOH ." by T. Suturoko d and M. Usanovich. (p.994)

SO: Journal of General Chemistry (Zhurnal Obshchei Khimii) 1951, Volume 21, No. 6

USANOVICH, M.

"Binary systems containing SnCl_4 , SbCl_3 , and AsCl_3 . III. The system $\text{SbCl}_3\text{-CH}_3\text{COOH}$." by Usanovich and T. Smarokova. (p.987)

SO: Journal of General Chemistry (Zhurnal Obshchei Khimii) 1951, Volume 21, No. 6

USANOVICH, M. I.

USSR

Binary systems formed by SnCl_4 , SbCl_5 , and AsCl_3 . IV. The system $\text{SbCl}_5\text{-CH}_3\text{COOH}$. M. I. Usanovich and T. Sumarokova. *Zhur. Obshchei Khim.* 21, 1214-18 (1951); cf. C.A. 48, 1787c.—The elec. cond., viscosity, and d. of the system $\text{SbCl}_5\text{-CH}_3\text{COOH}$ were detd. at 50, 60, and 70° for changing values of the concn. of the components. Existence of the compds. $\text{SbCl}_5\text{CH}_3\text{COOH}$ and $2\text{SbCl}_5\text{-CH}_3\text{COOH}$ is indicated. The fusion diagram for the system shows the presence of a compd. of equimolar compn. V. The system $\text{SbCl}_5\text{-CCl}_3\text{COOH}$. T. Sumarokova and M. Usanovich. *Ibid.* 1219-23.—The elec. cond., viscosity, and d. of the system $\text{SbCl}_5\text{-CCl}_3\text{COOH}$ were detd. at 50, 60, and 70° for different concns. of the components. The elec. cond.-compu. and viscosity-compu. diagrams show that an acid-base reaction occurs between the components. The presence of the compds. $\text{SbCl}_5\text{CCl}_3\text{COOH}$ and $2\text{SbCl}_5\text{-CCl}_3\text{COOH}$ is also indicated. The fusion diagram exhibits a max. corresponding to the compd. $\text{SbCl}_5\text{CCl}_3\text{COOH}$ with a m.p. of 58°. J. Rovnar Leach

MI 21

Lab. Phys. Chem., Inst. Chem. Sci., AS Kazakh SSR

USANOVICH, M.

191T18

USSR/Chemistry - Antimony Compounds

Jul 51

"Binary Systems Formed by SnCl_4 , SbCl_3 , and AsCl_3 . The System SbCl_3 - CCl_3COOH ," T. Sumarokova, M. Usanovich, Lab Phys Chem, Inst Chem, Acad Sci Kazakh SSR

"Zhur Obshch Khim" Vol XI, No 7, 1219-1222

Studied elec cond, viscosity, density of system SbCl_3 - CCl_3COOH at 50, 60, 70°C. Elec cond and viscosity diagrams showed presence of acid-base interaction between components and of compds $\text{SbCl}_3 \cdot \text{CCl}_3\text{COOH}$ and $2\text{SbCl}_3 \cdot \text{CCl}_3\text{COOH}$.

191T18

USSR/Chemistry - Antimony Compounds
(Contd)

Jul 51

Dyatectic max on fusibility diagram of system represented compd $\text{SbCl}_3 \cdot \text{CCl}_3\text{COOH}$ (mp 56°). This is 1st established case of CCl_3COOH acting as additive or oxonium base.

191T18

USANOVICH, M.

"On the acidic properties of MnO_4 ." (p. 1964)

SO: Journal of General Chemistry (Zhurnal Obshchei Khimii) 1951, Vol 21, No 11.

USANOVICH, M. I.

183T46

USSR/Chemistry - Electrolysis of Water

Jun 51

"Electrical Conductivity and Viscosity of System
KOH - K_2CO_3 - H_2O ," M. I. Usanovich, T. I. Sushkevich

"Zhur Prik Khim" Vol XXIV, No 6, pp 590-592

Detd elec cond of 18.86-41.59% KOH solns contg 1-31% K_2CO_3 at 25, 50, and 97°C. Sp cond of KOH decreases with addn of K_2CO_3 . Detd viscosity of 2 concns of KOH with different K_2CO_3 content at 25 and 50°C. It increases with addn of K_2CO_3 . Sp cond is lowered at expense of increased viscosity. KOH solns of these concns are used in industrial electrolysis of water.

183T46

Chemical Abst.
Vol. 48 No. 6
Mar. 25, 1954
General and Physical Chemistry

3
(2)
Theories of acids and bases. M. I. Usanovich. Izvest.
Akad. Nauk Kazakh. S.S.R. No. 101, Ser. Khim. No. 4,
97-106(1061).—Review with 32 references. G. M. K.

MT
11-5-54

USANOVICH, M.I.

TIKHOV, G.A., redaktor; USANOVICH, M.I.; SUVOROV, N.I., kandidat biologicheskikh nauk, zamestitel' redaktora; KARIMOV, M.G., kandidat fiziko-matematicheskikh nauk; KUCHEROV, N.I., kandidat fiziko-matematicheskikh nauk; GORSHENIN, D.S.; FEDOROV, N.N., sekretar' redkollegii; ROROKINA, Z.P., tekhnicheskii redaktor; RZHONDKOVSKAYA, L.S., redaktor.

[Discussion on the topic: Principal achievements of the astrobotany sector and the problem of the possibility of life on other planets (September 25-27, 1952)] Diskussii na temu: osnovnye dostizheniia sektora astrobotaniki i vopros o vozmozhnosti zhizni na drugikh planetakh (25-27 sentyabria 1952 g.) Alma-Ata, Izd-vo Akademii nauk Kazakh.SSR. 1953. 167 p. (Akademiia nauk Kazakhskoi SSR, Alma-Ata, Sektor astrobotaniki. Trudy v.2) (MLRA 10:1)

1. Deystvitel'nyy chlen Akademii nauk Kazakhskoy SSR (for Tikhov).
 2. Chlen-korrespondent Akademii nauk Kazakhskoy SSR (for Usanovich).
 3. Otvetstvennyi sekretar' redaktsii zhurnala "Vestnik Akademii nauk Kazakhskoy SSR" (for Gorshenin).
 4. Referent fiziko-matematicheskogo otdeleniia Akademii nauk Kazakhskoy SSR (for Fedorov).
- (Life on other planets)

USANOVICH, M.I.

(4)
The existence of antimony tetrachloride. M. I. Usanovich.
M. I. Usanovich, and M. I. Usanovich.

TIKHOV, Gavriil Adrianovich, astronom; USANOVICH, M.I., otvetstvennyy redaktor; RZHONDKOVSKAYA, L.S., redaktor; KORUKINA, Z.P., tekhnicheskiy redaktor

[Principal works; in five volumes] Osnovnye trudy; v piati tomakh. Alma-Ata, Izd-vo Akademii nauk Kazakhskoi SSR. Vol.1. [Astrophysics (1897-1919)] Astrofizika (1897-1919). 1954. 334 p. (MLRA 10:3)

1. Chlen-korrespondent Akademii nauk SSSR, deystvitel'nyy chlen Akademii nauk KazSSR (for Tikhov) 2. Chlen-korrespondent Akademii nauk KazSSR (for Usanovich)
(Astrophysics)

USANOVICH, M.

USSR/Chemistry - Quantitative analysis

Card 1/1 : Pub. 22 - 29/49

Authors : Usanovich, M.; Sumarokova, T.; and Nevskaya, Yu.

Title : Cryoscopic titration

Periodical : Dok. AN SSSR 98/4, 617-618, Oct. 1, 1954

Abstract : The application of cryoscopy for quantitative analysis and for studying reactions of formation of complex compounds, soluble and insoluble in any given cryoscopic solvent, was investigated. The results obtained through cryoscopic titration of complex compounds appear to satisfy all requirements of analytical accuracy. In addition, cryoscopic titration reveals new very-broad possibilities for quantitative analysis of organic substances. Two USSR references (1941 & 1949). Graphs.

Institution : ...

Presented by: Academician A. P. Vinogradov, May 6, 1954

TIKHOV, Gavriil Adrianovich; USANOVICH, M.I.; VOZHEYKO, I.V., redakter;
BOROKINA, Z.P., tekhnicheskiy redaktor.

[Principal works; in five volumes] Osnovnye trudy; v piati tomakh.
Alma-Ata Izd-vo Akademii nauk Kazakhskoi SSR. Vol.2 [Astrophysics
and atmospheric optics (1940-1945)] Astrofizika i atmosferynaya
optika (1910-1945). 1955. 381 p. (MLBA 9:4)

1.Chlen-korrespondent Akademii nauk SSSR, deystvitel'nyy chlen AN
KazSSR (for Tikhov). 2.Chlen-korrespondent AN KazSSR (for Usanovich).
(Astrophysics) (Astronomical photography)

4

✓ The determination of the composition of ternary systems from the data of physicochemical analysis. H. I. Usanovich and A. I. Miron. *Izv. Akad. Nauk. Kazakh. S.S.R. Ser. Khim.* 1955, No. 8, 41-9 (in Russian).—At 25° the sp. gr. and the n_D of the following ternary systems were measured: $\text{Na}_2\text{SO}_4\text{-NaCl-H}_2\text{O}$; $\text{Na}_2\text{SO}_4\text{-Na}_2\text{S-H}_2\text{O}$; $\text{MgCl}_2\text{-NaCl-H}_2\text{O}$; $\text{MgCl}_2\text{-KCl-H}_2\text{O}$; $\text{MgSO}_4\text{-Na}_2\text{SO}_4\text{-H}_2\text{O}$. From the sp. grs. and the n_D the composition of the ternary system can be found as well as from the other properties heretofore used for this purpose (chem. analysis, etc.). This method has the advantage of being much more rapid.

Werner Jacobson

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MI, USANOVICH

The question of decomposition voltage of aqueous solutions. M. I. Usanovich. *Izvest. Akad. Nauk Kazakh. S.S.R., Ser. Khim.* 198, 8, 166-72 (1955) (in Russian). H
LeBlanc's views on the electrolytic reaction process in the presence of many ions (M. LeBlanc, *Z. physik. chem.* 3, 209 (1891); M. LeBlanc, *Textbook of Electrochem.*, Moscow-Leningrad 1930) (translation) is criticized as erroneous. On the contrary, in reversible processes the electrode potential is considered to be detd. by the final result, and not by the primary stage of the process. The mechanism of the electrode process cannot be judged on the basis of the electrode potential, the latter being a macroscopic quantity. In particular, thermodynamics does not exclude the possibility of secondary evolution of H₂ at a cathode at a reversible H₂ potential. In cases, where the discharged ions yield different final products, the discharge of a given ion may take place at different potentials. E. M. Elkin

V. Oxonium compounds of esters with organic acids. I.
M. Usanovich, K. Bilyalov, and L. Krasnaya. Zhur.
Obshchei Khim. 25, 471-7(1955); J. Gen. Chem. U.S.S.R.
25, 439-44(1955)(Engl. translation).--The values of d , and
 viscosity at 25°, 40°, and 60° were detd. for the binary
 systems AcOH-EtOAc, BuOAc-AcOH, AmOAc-AcOH and
 AmO₂CPr-AcOH, and the vapor pressures of the binary
 systems BuOAc-AcOH, AmOAc-AcOH, and EtOAc-AcOH
 were detd. The results, shown graphically, are summarized
 as follows: In EtOAc-AcOH system only the assoc. of
 AcOH is evident, the phys. properties of the system not
 showing any definite component interaction. In BuOAc-
 AcOH system there is an indication of mutual interaction,
 although the AcOH assoc. is still the predominant factor;
 the vapor pressure of the system shows neg. deviation from
 Raoult's law, and has an inflection point at near 60% molar
 compn. The system AmO₂CPr-AcOH shows a min. in
 viscosity at 20-30 mole-% ester and an ill-defined max.,
 indicating mutual component interaction, but the absence
 of electrical cond. indicates that this is not of acid-base
 type. The AmOAc-AcOH system shows a max. and a

min. in the viscosity, which are unstable with respect to
 elevated temp.; vapor pressure shows neg. deviation from
 Raoult's law; the system is again nonconducting, indicating
 that the interaction of components is not of the acid-base-
 type. Thus, the interaction between the ester and the acid
 tends to increase in importance with an increase of the size
 of the radicals of the ester. II. The system acetic acid-
 cetyl acetate. T. Simarokova and K. Bilyalov. Zhur.
 Obshchei Khim. 25, 477-9(1955); J. Gen. Chem. U.S.S.R.
 25, 445-6(1955)(Engl. translation).--Viscosity and d . of
 C₁₆H₃₃OAc-AcOH system were detd. at 40°, 50°, 60°, and
 70°. The results, shown graphically, indicate that the 40°
 viscosity isotherm has an S-form, changing its shape at
 higher temps. with elimination of assoc. of AcOH; the
 convex shape of the viscosity curves indicates fairly strong
 component interaction, greater than that in EtOAc-AcOH
 system. (S. M. Kosolapov)

Inst. Chem. Sci., AS Kazakh SSR

215 # NOVICH, M.

4

✓ Electrical conductivity, viscosity, and density of the system $\text{SnBr}_4\text{-HOAc}$. M. Usanovich and E. Yakovleva. *Zhur. Obshch. Khim.* 25, 1111-1112 (1956). The isotherms of viscosity and of elec. cond. indicate the formation of a thermally-unstable complex compd. of undetd. compn. The interaction is apparently of an acid-base character, as evidenced by the elec. cond. E. M. Elkin

(1)

7/1/57

USANOVICH, M. I.

4

Vapor pressure of the systems: water-ethanol-benzophenone and water-ethanol-triphenylcarbinol. M. I. Usanovich, V. P. Selezneva, and K. E. Khalutina. *Zhur. Obshch. Khim.* 25, 2427-30 (1955). The effect was studied of adding a 3rd component, which is sol. in EtOH but not in H₂O, on the vapor pressure of the EtOH-H₂O system. Benzophenone (I) and triphenylcarbinol (II) were used as the 3rd component. The vapor pressure was measured at 20, 40, 55, and 75°, and the values were plotted vs. compn. of the binary mixt. The addn. of I and II decreased the partial pressure of the EtOH and increased that of the H₂O. These effects became more pronounced as the concn. of I and II were increased. J. Roytar Leach.

(2)

174
1955

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AID P - 2786

Subject : USSR/Chemistry

Card 1/1 Pub. 152 - 14/19

Authors : Usanovich, M. I. and A. I. Mun

Title : Determination of the composition of the system
NaCl-Na₂SO₄-H₂O by specific gravity and refractive
index

Periodical : Zhur. prikl. khim. 28, 4, 436-440, 1955

Abstract : A description of the method is given. The composition
of the solutions can be determined very rapidly and
with great accuracy (error: $\pm 0.5\%$). One table, 3
diagrams, 4 Russian references: 1930-1947).

Institution : Institute of Chemical Sciences of the Academy of
Sciences of the Kazakh SSR

Submitted : My 3, 1954

KOZLOVSKIY, Mikhail Tikhonovich; GLAZYRINA, D.M., redaktor; USANOVICH,
M.I., redaktor; FEDOROV, N.V., tekhnicheskiy redaktor.

[Mercury and amalgams in electro-chemical methods of analysis]
Rtut' i anal'gamy v elektrokhimicheskikh metodakh analiza. Alma-
Ata, Izd-vo Akademii nauk Kazakhskoi SSR, 1956. 185 p. (MLBA 9:4)
(Mercury) (Amalgams) (Electrochemistry)

USANOVICH, M.I.

USSR/Atomic and Molecular Physics - Liquids

D-8

Abs Jour : Ref Zhur - Fizika, No 1, 1958, 825

Author : Usanovich, M.I.

Inat : -

Title : On the Viscosity of Liquid Mixtures.

Orig Pub : Izv. AN KazSSR, ser. Khim., 1956, vyp. 10, 30-39

Abstract : The following empirical equation is proposed for the isotherm of the viscosity of an ideal multi-component mixture:

$$\eta = \chi_A \eta_A + \chi_B \eta_B + \dots \quad (1)$$

where χ_A and χ_B are the molar fractions of the components. This leads to a general equation for ideal binary systems, $(\ln \eta - \ln \eta_B) / (\ln \eta_A - \ln \eta_B) = \chi_A$. The formula (1) is based on the assumption that the activation energies

Card 1/2

USANOVICH

run at 25, 40, and 125 for system. In the
CCl₄/CO₂/Et₂AcOH and effects of chemical composition. In the
1st instance the viscosity curves are convex to the temperature
axis and d. isotherms indicate slight contraction. A log
plot of viscosity shows a break indicating a change in the
2nd system shows a min. in the viscosity curve at 10 mm Hg
rate which vanishes at elevated temp. d. curves show a
slight expansion of the system, vapor pressure data for the
system shows pos. deviation from Raoult's law for the
AcOH component, and neg. deviation for the ester; the re-
sults indicate predominant disson. of assoc. mol. of the
acid
G. M. Kozlovich

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USANOVICH, M.

USSR/Thermodynamics. Thermochemistry. Equilibria. Physico-Chemical B-8
Analysis. Phase Transitions

Abs Jour : Ref Zhur - Khimiya, No 8, 1957, 26169

Author : M. Usanovich, Ye. Pichugina
Inst : Academy of Sciences of Kazakh SSR
Title : System Stannic Chloride - Phenol

Orig Pub : Zh. obshch, khimii, 1956, 26, No 8, 2125-2130

Abstract : The viscosity η , the density d , and the specific electrical conductivity κ of the system C_6H_5OH (I) - $SnCl_4$ at 20, 40, 60 and 80°, as well as the vapor pressure p at 40, 60 and 80° were measured. The isotherms of η pass through a maximum, the position of which changes from 90 mol.% of I at 80° to 85 - 87 mol.% of I at 20°. The isotherms of κ adjusted for η have a maximum at 84 to 85 mol.% of I at all temperatures under study. The magnitudes of η and the adjusted κ drop sharply with the temperature rise. On the basis of the obtained data, considerations in favor of the

Card : 1/2

USSR/Thermodynamics. Thermochemistry. Equilibria. Physico-Chemical B-8
Analysis. Phase Transitions.

Abs Jour : Ref Zhur - Khimiya, No 8, 1957, 26169

formation of the compound $\text{SnCl}_4 \cdot 4\text{C}_6\text{H}_5\text{OH}$ (II) in the system are expressed. The results of measurement of d and p confirm the presence of a compound. The structure $[\text{SnCl}_4(\text{C}_6\text{H}_5\text{O})_2]^{2+} \cdot 2\text{C}_6\text{H}_5\text{OH}^-$ is ascribed to II in the light of the earlier developed views on the nature of complex formation (Usanovich M.I., Izv. AN Kaz SSR. Ser. khim., 1949, 3, 3). The thermal instability of II is noted. The thesis of an anomalously high mobility of $\text{C}_6\text{H}_5\text{OH}$ in I is expressed.

Card : 2/2

Usanovich, M.

USSR/Thermodynamics. Thermochemistry. Equilibria. Physico-Chemical B-8
Analysis. Phase Transitions.

Abs Jour : Ref Zhur - Khimiya, No 8, 1957, 26168

Author : M. Usanovich, Ye. Pichugina

Title : Systems Produced by Tin with Nitrobenzene and m-Dinitrobenzene.

Orig Pub : Zh. Obshch. khimii, 1956, 26, No 8, 2130-2134

Abstract : The viscosity and density of the system $\text{SnCl}_4 - \text{C}_6\text{H}_5\text{NO}_2$ (1) at 20, 40, 60 and 80° and of the system $\text{SnCl}_4 - m\text{-C}_6\text{H}_4(\text{NO}_2)_2$ (2) at 80 and 100°, as well as the fusibility of the latter were studied. The formation of the compound $\text{SnCl}_4 \cdot 2\text{C}_6\text{H}_5\text{NO}_2$ in the system (1) was confirmed; the data (Reihler H., Hake A., Zbl., 1927, 1, 1808) about the existence of a compound of the composition 1 : 1 were not confirmed. The presence of interaction between the components in the system (2) was established by the viscosity and the density methods. No information concerning the composition of the forming compound was obtained. The interaction of components is not indicated on the fusibility diagram.

Card : 2/2

Usanovich, M. I.

Complex formation of stannic chloride with some derivatives of phenol. M. I. Usanovich and E. Pichon. Zhur. Khimich. Khim. 26, 2410-19 (1964). Viscosity and d. were detd. at 25°, 40°, and 60° for the system SnCl_4 -o-

$\text{O}_2\text{NC}_6\text{H}_4\text{OH}$; the viscosity isotherms are convex toward the common axis (at 25° the detns. were made only to 50 mole % nitrophenol, owing to solidification at higher concn.). The curves of sp. vol. are rectilinear, and the system lacks cond., indicating no chem. interaction. The system SnCl_4 -p- $\text{O}_2\text{NC}_6\text{H}_4\text{OH}$ was studied only as to m.p., because the liquid phase showed layering and could not be studied; the phase diagram is reproduced, showing a eutectic very close to SnCl_4 and a min. at 89° at 59.6 mole % nitrophenol and a complex indicated by a strongly convex boundary with max. at about 112° and 33 mole % nitrophenol. The system SnCl_4 -2,4-(O_2N) $_2\text{C}_6\text{H}_3\text{OH}$, also studied only as to m.p., shows a simple behavior with a single eutectic very close to SnCl_4 ; no component interaction could be deduced from it. The system SnCl_4 -p- $\text{H}_2\text{NC}_6\text{H}_4\text{OH}$ was prepd. in hot xylene, yielding ppts. composed invariably of $\text{SnCl}_4 \cdot 2$ -(p- $\text{H}_2\text{NC}_6\text{H}_4\text{OH}$), the compd. is a lilac solid, decomp. 224-5°. G. M. Ewinghoff

PM NK

U.S. NOYICH, M. L.

Viscosity and density of the system anisole-chloroform
 anisole. M. L. U. Noyich and E. Pichuzina (State Univ.
 Alma-Ata). Chem. Zhurn. Khim. 26, 2418-19 (1966).
 Determination of d. and viscosity of system $\text{SnCl}_4\text{-MeOPh}$ at 20°,
 40°, 60°, and 80° shows a max. of viscosity at 60 mole%
 PhOMe at 21°; at higher temp. this is displaced toward
 SnCl_4 , with appearance of a min. that moves toward
 MeOPh common. Curves of d. are rectilinear. Thus the
 complex $\text{SnCl}_4\cdot 2\text{MeOPh}$ apparently exists. G. M. F.

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USANOVICH, M. I.

7

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Oxonium compounds of ethers with organic acids. IV.
System of methyl acetate with formic acid, single
and with triacetate. *M. I. Usanovich, K. V. Kuznetsov, and A. A. Kozlov, Zh. Fiz. Khim.* 36, 1723 (1962); *Ch. U.S.S.R.* 36, 1723 (1962).
60°, 60°, and 70° of viscosity and α in the binary sys-
tems, which yield slightly curved compn. isotherms, showed
that $\text{AcOH} \cdot \text{HCO}_2\text{H}$ and $\text{AcOAc} \cdot \text{CCl}_3\text{CO}_2\text{H}$ systems
are not simple mixtures of the components, but through
H-bonding of HCO_2H and AcOH and $\text{CCl}_3\text{CO}_2\text{H}$ does not form a
isotherms definitely, but such is observed in the
the authors.

USANOVICH, M. I.

V

TIKHOV, G.A., akademik; USANOVICH, M.I., otvetstvenny red.; RZHONDKOVSKAYA, L.S., red.; BOROKINA, Z.P., tekhn.red.

[Principal works: in five volumes] Osnovnye trudy; v piati tomakh. Alma-Ata, Izd-vo Akad.nauk Kazakhskoi SSR. Vol.3. [Astrophysics (1912-1956)], Astrofizika (1912-1956). 1957. 233 p. (MIRA 11:1)

1. Chlen-korrespondent Akademii nauk SSSR (for Tikhov). 2. AN KazSSR (for Tikhov). 3. Chlen-korrespondent AN KazSSR (for Usanovich).

(Astrophysics)